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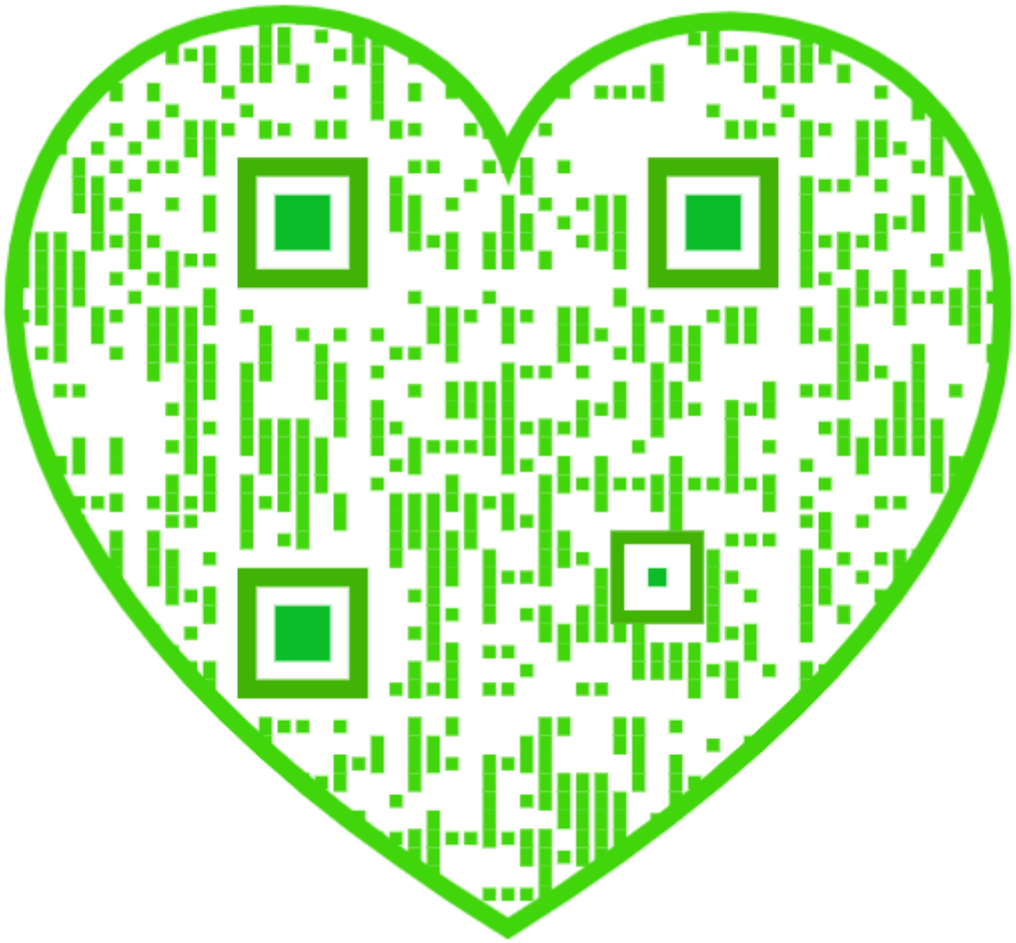
Common Sense Treatment of Farm Animals

By Dr. C. D. Smead



COMMON SENSE TREATMENT

OF

FARM ANIMALS

BY

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OF

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FOREWORD.

As a preface to what the following pages may contain I desire to say: My intentions are not to make veterinarians of the readers of this little book. Neither is it my design to make of it a class book for students of veterinary science, nor to make it what may be strictly called a scientific work. Yet what its pages contain will be based on scientific facts. My desire is to so instruct the host of my Stockman friends who have from time to time sought my advice as to enable them in cases of emergency to do something toward saving the lives of their animals when no veterinarian is to be had. For several years I have been solicited by my Stockman friends to write a book they could refer to in the management of their animals so as to avoid sickness among them and treat the more common troubles. It is therefore to them especially that I dedicate this little book and I hope that long after I have passed to the Great Unknown some of them may refer to it as a friend in time of need.

Most cordially yours,

C. D. SMEAD.

[*Photographs by F. O. Sibley, Milford, N. Y.*]

CHAPTER I.

SOME OF THE PRINCIPAL CAUSES OF DISEASE.

In the study of animal diseases and the best means of treating them the all-important thing is, so far as possible, to learn the cause. Having learned the cause, we have knowledge of how best to treat it successfully, and more than this we learn how to prevent the disease, which is most important of all. As the student and practitioner of veterinary medicine and surgery finds on the farms of the country, from one ocean to the other, diseases among domestic animals he finds that not less than fifty per cent of them have been caused by lack of knowledge of feeding the young animals from birth to maturity, or if not always lack of knowledge, a neglect of the growing colt, calf, lamb, pig or chicken so that it cannot grow up into a strong, vigorous animal. Hence with lack of constitutional vigor to stand work (if working animals), or feeding if dairy, beef, pork or mutton animals, they are not only deficient as workers, milkers or feeders, but they are constantly subject to diseases of a certain class from which they would have been immune had they been properly fed so as to have maintained a healthy, strong digestion. With a strong digestion we always find the whole physical system strong, barring of course some inherent weakness or deformity.

It is not our purpose to deal specifically with kinds of food, or of their combination into so-called balanced rations, but to treat this part of the subject in a general way. Thus we can safely bank on this: Milk is a product that never as yet has been supplanted by any other known food or combination of foods that science has been able to find. A human infant cannot exist for any considerable length of time except as milk is furnished it for sustenance. Neither can a little colt, calf, lamb or pig. No scientist has ever as yet learned how to manufacture simple, plain, wholesome milk as it is drawn from the mammary glands of a mother, whether that mother be human or of the lower animals. While it is true that there is a variation in the solids that milk contains from different animals, the same fundamental principle is found in the milk of all animals. It is a product whose manufacture is in the animal. With all of the knowledge thus far acquired it remains a mystery just how the mother is enabled to eat, digest and put into her circulatory system the nutrients she eats as food and throw off these nutrients through the mammary

glands so that her babe may be nourished. We have, however, learned many facts regarding this product (milk), and fact number one is: That in order to enable the mother to manufacture milk a certain class of food has to be eaten and digested by her or she can manufacture no milk, and her offspring, although born strong, would starve for lack of sustenance. Thus we say milk is a perfect food for the young animal, and nearly so for the growing animal, and only a little more carbon is needed in a form to give the stomach distension for the fully grown animal.

Now when we apply this knowledge to the maintenance of health what do we find? Simply this—that a class of food that will enable a mother to make milk of it in fair quantity is a health preserving food. And when we feed a young and growing animal on a class of food which if it were fed to a nursing mother would not enable her to convert it into milk we are feeding that young animal a class of food that will stunt its growth from a lack of proper nourishment, overtax its digestive organs by taking into its stomach a surplus of bulky substance that weakens its digestion, and it grows up an animal subject to intestinal disease on slight provocation. With insufficient food nutrients we have a weak muscular system, weak ligaments of the joints, and sometimes a bony structure lacking in strength. Thus it is we find many animals of superior breeding that grow up weaklings. They were well born and started well in life on the milk of the mother, and when such animal is a foal it grows a beauty so long as it remains with the mother, nurses her and learns to eat the class of food with her that she is manufacturing into milk for it. But what a change sometimes follows when this little beauty is weaned from its mother, and furnished the class of food its owner ignorantly feeds it. The same rule holds good regarding the raising of a calf or a pig when weaned from the mother and the mother's milk at a tender age and a supplemental food furnished it. This is right and proper when wisely and intelligently done. But when said supplemental food is of a character widely different from the analysis of milk trouble follows in the form of a weakened digestion, with the result of sudden death, or a worthless beast either as a work horse, a dairy cow, or a fattening animal.

We especially call attention of all animal breeders to the necessity of studying the needs of the young animal, to insure a steady, healthy growth from birth up to maturity, and then continuing practically on the same line of feeding in order to maintain good digestion, with a consequent vigorous constitution. But how is the farmer to learn? is a pertinent question and a highly proper one, and at the present time a very easy one to answer. The agricultural press generally is furnishing the very essence or extract of practical knowledge on the subject of feeding animals, and the

experiment stations are putting forth bulletins constantly giving freely to the world the results of their experiments in the feeding of animals. The agricultural press and the experiment station bulletins are just as essential to the progressive breeders of domestic animals as law journals and medical journals are to the lawyer and the man of medicine.

In the beginning of this chapter I spoke of breeding in connection with feeding, and have thus far spoken of improper feeding. I have given the feeding first place as I have learned by experience that the lack of proper feeding is about twice as disastrous as the lack of proper breeding of animals as far as the disease problem is concerned. Remember I am not discussing breeding for profit or loss, but breeding as a cause of disease. As students of veterinary science and animal husbandry have studied these questions, it has been found that not far from twenty per cent of the horses that become blemished either in colthood or when they are put to work do so from an inherited weakness, or from a conformation not suited to the class of work required of them in after life. We also find from five to fifteen per cent of the dairy cows that go wrong in their udders do so by reason of their having been bred with such a conformation that to carry an udder without injuring it is impossible. We also find that many breeders of animals, who by the way are alone responsible for whatever the animal is, have dictated the mating or allowed the mating of animals with such weak physical conformation as to be wholly lacking in constitution. A fad that some possess on color lines, or milk veins, or udder conformation, leads them to overlook the points in an animal which denote physical strength. Many are the animals of the bovine family bred by faddists that are fit subjects for disease germs, especially of tuberculosis. We shall endeavor in future chapters to illustrate by pictures animals that are subject to a certain class of disease. Having said this much regarding food and the mating of animals, let us consider some of the diseases which are most directly caused by a bad system of feeding. Under this head will naturally come first:

SPASMODIC COLIC.

This is a farmer name for acute indigestion.

This also with tympanitic colic (bloating), or a colic called "sterchoral colic" by the veterinarian, stoppage of the bowels by farmers, or impaction.

Now all of these are the results directly or indirectly of improper feeding. The direct cause is the inability of the stomach with the aid of the liver and pancreas to secrete juices which will digest or put in condition the food that has been eaten so that it can be digested. Hence it is that spasmodic, muscular pain is

produced in the stomach or intestines farther along. As an illustration of what I desire to impress upon the reader's mind, I will call attention to what we as humans experience. It has been truthfully said that "What is one man's meat is another man's poison." This saying has its origin in the simple fact that the digestion of all persons is not the same. A class of food that would be relished and well received by the stomach of nineteen men would not be well received by the stomach of the twentieth man, and might produce in him an attack of acute indigestion, with the spasmodic griping pain we call "spasmodic colic" in the horse. Thus it is that whenever a horse owner has a horse that has frequent attacks of colic he should not only seek a remedy to relieve the pain and cure the colic, but he should make some changes in that horse's feed. Some horses (especially the Eastern-bred horses of New York and New England) cannot eat and well digest corn in any form it may be prepared for them without bringing on a case of spasmodic colic. Yet all horses of the Middle West are largely fed on corn. It is not good judgment, therefore, for horse owners to strive to reason that because perhaps twenty or even forty horses are eating a certain class of food and thrive well on it, all horses can eat the same class of food without making them sick. Thus it is we advise some change in the feed to be made in every case where a horse has had frequent attacks of colic. But this in my years of practice has been the hardest thing to get horse owners (especially farmers) to do. They have corn, rye, wheat or buckwheat in plenty, while oats are scarce with them. Thus it is they desire to feed whatever they have in the greatest quantity, and when the horse is made sick by reason of feeding it they are reluctant to change, but seek a remedy to relieve the horse for the time being, then continue to feed him just the same as before, with the result many times of large veterinary bills or a dead horse.

Farmers as a rule seek remedies and ignore causes. Were it not for this we veterinarians might sometimes go hungry for jobs. By far too many people, when they learn the remedy used in curing their horse of colic, flatter themselves that they have the veterinarian's secret, when in fact they have in hand only what may fail as the case may reach a stage when the remedy is not capable of conquering the disease. As a home remedy in a case of spasmodic colic, none stands ahead of a tablespoonful of good ginger, the same of common baking soda, dissolved or mixed in a pint of hot water and given while still warm. This repeat in half an hour in case the animal is suffering much pain. As a more efficient remedy for horse owner's use, to keep as a general stable remedy, the following is a good one: It is made by

No. 1—The type of udder that is subject to Garget.—[*See page 33*]

No. 9—Road horse with weakness in fore legs.—[*See page 61*]

mixing together two ounces each of tincture of ginger, sulphuric ether, tincture of opium and spirits of niter. Then add one ounce of essence of peppermint. Give of this two tablespoonfuls in a pint of water. Repeat in a half-hour if not relieved. When relief takes place and the animal lies quiet, stop giving. Never be frightened when the animal lies down and stretches out flat on his side. Put a blanket on him and let him alone, even if he lies for several hours, unless he really has passed all cure and is down never to rise again. It is a good symptom that the pain has passed over, and recovery is taking place. Always feel encouraged when a rumbling is heard in the bowels in a case of spasmodic colic. Never be in haste to encourage a horse to eat when recovering from any bowel disease. Many a horse is killed by a relapse of the disease from over-feeding after having passed through the critical period of the disease. Never be afraid to give the horse a few swallows of water when suffering from colic of any kind.

CATHARTICS AS A CURE OF COLIC.

Some veterinarians high in authority have advised the giving of aloes as a cathartic as the first dose in a case of spasmodic colic, but such has not been my experience. There is no need of a physic until we can quiet the pain. Then as the safest remedy for the farmer or general horse owner, I much prefer a pint of pure raw linseed oil. As its cathartic effect is mechanical and not by reason of exciting spasmodic action of the muscles of the intestinal canal, as a rule no physic is called for at all. In a case of common or spasmodic colic plenty of water given in small quantities, together with laxative food like a feed of three quarts of scalded wheat bran, with a handful of ground flaxseed added, will be all that is needed. When the means and remedies advised do not relieve the suffering brute, and a good veterinarian is within reach, the safer way is to have him see the animal, when more potent means may be used by him. But drastic or extremely potent drugs are never safe in other than skilled hands.

TYMPANITIC OR BLOATING COLIC.

This species of colic in animals, especially horses, is but one form of spasmodic colic. It is a consequence of food that has been eaten which is not properly digested, and a fermentation is set up which involves gas to an extent which distends the stomach or large intestines, sometimes to a degree which causes death by suffocation before the veterinarian can be got to see the patient. Hence it is highly important that farmers living miles, sometimes, from the city or town where the veterinarian

is located be enabled to do something to relieve the sufferer before it becomes too late to save his life. In this chapter I will only speak of a treatment for the horse, reserving the treatment for cattle for a future chapter. When the fermentation is going on solely in the stomach tablespoon doses of common baking soda with a stimulant like a teaspoon of ground black pepper, mixed in a pint of warm water, will many times prove an efficient remedy. A more potent one, however, is a half-ounce of the carbonate of ammonia, dissolved in a pint or more of cold water and poured down the throat. Repeat in twenty minutes if bloating continues. But alas, the stomach form of tympany (gas formation) in the horse is not the common but the least common form of the trouble. The part of the intestinal canal known as the colon is the point where the gas does most of its deadly work, and is beyond a point where remedies given by the mouth have great effect. Hence it becomes necessary for the farmer to have some instruments on hand or he is powerless to do anything when the veterinarian is not to be had. Now I care not if the farmer owns only a team of horses and two cows, he needs to own a good metal syringe, with a pipe six inches long, and also a smaller pipe, the syringe holding not less than a pint. It can be had of instrument makers, or any druggist can order it at a nominal cost. This syringe and a bucket of warm soapy water with a handful of common salt added, used as a rectal enema, will save, if used in time, many a horse suffering with Tympanitis (bloat) before the veterinarian can drive five miles with his treatment (called a trocar) to tap the distended colon. This trocar, by the way, we shall speak of later on in discussing diseases of cattle, when it can be safely used by farmers. But it is an instrument that requires a skilled hand to use in tapping the horse. Again the syringe will be the needed instrument in the cleaning of punctured wounds and answer all practical purposes, in the treatment of Tympanitic Colic, when used at the beginning of the bloat.

STERCHORAL COLIC, CAUSED BY CONSTIPATION.

The third and last species of Colic that we shall speak of is known by various names. The veterinarian calls it Sterchoral Colic, or a colic as the result of constipation or mechanical obstruction through the stomachs of the cow and intestines of the horse. Sometimes it is named for short Straw Colic. Its general cause is the habit the animal owners have of supplying no laxative food through the long winter months, feeding day after day on dry fodder, hay or straw regardless of the nutrition these foods may contain. In some instances the animal is turned to a

stack of straw and because it eats voraciously of it the owner thinks the animal is doing finely, as it is always full and always hungry for more food. Always full but never fed, and constantly starving! But whether the dry food is fairly nutritious or not, the fact of its being dry necessitates the secretion of more of the bile from the liver, the pancreatic fluids and gastric juices to digest it, and unless the animal is fed more nutritious food in the form of grain, or the animal has exceedingly strong digestion, the time will come when there is a weakening of the functional duty of the liver, the pancreas, and the secretive powers of the intestines. Then we begin to see constipation of the animal, and later a dull, continuous pain manifest in the abdominal region. The horse will stand and paw, and occasionally look around at his sides, sometimes lie down and stretch out at full length and groan, then get up and begin pawing again. In such a case if the ear is placed to the side of the abdomen, no sound is heard of the intestines contracting and relaxing, producing what is known as peristaltic action of the bowels. In fact digestion has stopped and unless it can be set in operation within a limited time an inflammation will set up, and we have a case of peritonitis (inflammation of the bowels) to contend with, which is a disease beyond the skill of the ordinary farmer. The animal owner should use his knowledge and skill in preventing serious ailments, and this is manifestly true in the treatment of all forms of Colic, before the more deadly disease peritonitis or enteritis takes place (inflammation of the bowels, in farmer language). Now comes in the treatment. What shall it be? The digestion has stopped, and may be in a semi-paralytic condition. The all-important thing is to secure bowel movement, and many skilled men in medicine actually aggravate the trouble, and sometimes cause the death of animals, when not at all in a serious condition, by their extreme desire to see a bowel movement. Drastic purgative agents are used, which cause muscular contractions of the bowels, in a striving to force a dried mass of indigested coarse food through them before this mass is so softened as to be put in a condition to pass through the alimentary canal. When aloes or aloin is given we do not in any way soften this mass of dry substance. We only excite the liver into secreting a little more bile and bring on muscular contractions of the bowels. We therefore condemn active physics in the treatment of such cases, and advise the use of agents which act mechanically more than actively. Thus we have in either castor or pure raw linseed oil the best and safest remedy for the farmer to use. Every farmer should keep on hand not less than one gallon

of pure raw linseed oil. Give a pint of this at a single dose, add to it a tablespoon of good ginger, to act as a stimulant. Give the horse, or cow either, all the water it will drink, and offer the water frequently. Repeat the oil in two hours, and in a severe case every hour, and put in two teaspoons of the spasmodic colic remedy. Here again we have use for the syringe. Use this by injecting a half-gallon or even a gallon of warm, soapy, slightly salted enema, and use it as often as every half-hour, until a natural rumbling is heard in the bowels, and the animal ceases to paw and manifest other symptoms of pain. In recovering from this species of colic, there is never the sudden let-up of pain and quick recovery that mark the two preceding species of colic. There may be momentary spasms or a griping for even twenty-four hours, before all symptoms of disease have passed over.

AFTER TREATMENT.

The treating of all animals after having suffered an attack of either of the kinds of colic mentioned is of fully as much importance as the treatment during the immediate attack. Many an animal owner in his haste and desire to see his animal well again, or get him to work, will strive to do it by seeing if he will not eat a bunk full of hay, or a full feed of grain. Right here I desire to especially caution the reader. Always put the animal on a stinted ration for at least three days after a recovery from the active stage of the disease, and always prepare that so that it will be easily digested. As to the kind of food I am not so particular. If the animal has a voracious appetite be doubly careful about over-feeding. In case there is but little desire to eat anything at all set your wits at work and hunt up some class of food that he will relish. It may be a sour apple or a carrot, a burdock leaf or a corn husk, or a quart or two of wheat bran, whole wheat or ground oats. As a remedy to stimulate the appetite use twenty-five to fifty drops of fluid extract of nux vomica, given in a spoonful of water on the tongue, three times a day.

DISEASES PRODUCED BY EXCESSIVE FEEDING.

Thus far we have spoken of disease as a result of either improper foods or foods fed unwisely. We shall now speak of a disease caused by the improper feeding of a good food. I refer to the disease known to veterinarians as

AZOTURIA.

To horse owners it is known under different names such as "black water," "sweating colic," or "kidney stiffness."

The voidings from the kidneys during an attack are very dark in color, sometimes nearly black, and always have a strong smell of ammonia, thus the name black water. As sweating from the start takes place, and usually some abdominal pain is present, it quite naturally would be given the name of sweating colic; and as the animal always suffers more or less muscular stiffness, and the urine is high colored, it could well be named "kidney stiffness" when one knows no other name to give it. Even up to within fifty years the veterinary profession had no real knowledge of the cause of this disease. When the sufferer was afflicted to the extent of being unable to stand on its feet it was called paralysis as a result of spinal congestion, which was true. Just what caused the congestion veterinarians did not know. But as knowledge has been gained along the lines of digestion and assimilation of foods the cause has become perfectly plain, and the means of prevention should be known by every horse owner, although other animals than the horse are subject to it, particularly rapidly growing lambs and pigs, which will be spoken of in a special chapter later on. What we say now will especially apply to the horse.

Now I desire every reader's attention, as it is of especial importance to him that he understands to a degree how all food is used up in the animal system. As an illustration I will call attention to the fact that there is a constant wearing out of muscular tissue going on in all animate bodies, and the food that is eaten is constantly building up what is being torn down in the animal system. When we are doing hard physical labor with the horse we all know that it must be fed on a more concentrated and more nutritious food. Hence the horse that is worked is fed grain to keep up his strength, and also to keep him from growing thin in flesh. All horse owners or horse users have learned this fact. Yet many are ignorant of the manner in which the food nutrients are taken care of by the digestive system. Digestion can be considered as only a chemical change, produced by a mingling of the bile from the liver, after food has been moistened by the saliva in the process of mastication, with the fluid from the pancreas and later with the gastric juices. These combined so dissolve the food as to permit the nutrients to be sucked up into the blood and carried to various parts of the body to build up the tissue that is being torn down by the labor the horse is performing. Now in the case of a horse that is laboring every day and is fed on a nutritious class of food, all goes well with him, as he has nutrition to build up what the labor is tearing down. But stop work even for a day, and full feed the horse,

No. 10—The type most subject to Tuberculosis.—[*See page 62*]

No. 11—Good dairy type, with strong vitality, yet with udder subject to Garget.—[*See page 62*]

then what takes place? This nutritious food is being digested and taken up by the blood, but there was no labor performed to break down any tissue of the body, so there the nutrients are in the blood, semi-coagulating it. A part of the nutrients may be stored up in making fat and muscle, but there cannot be enough of this to anywhere near use up the surplus food nutrients. Now what is to be done? How is nature to get rid of it? The horse is fed his regular full feed of grain and more of the nutrients of it are taken into the blood, so that it becomes more and more loaded with unappropriated nutrients of the food it is eating. The liver from the idleness of the horse fails to secrete bile enough to convert this excess into urea, so that the kidneys can carry it off as urine. The horse as he remains idle suffers no inconvenience whatever. His limbs may ache like a person's limbs when he eats hearty meals and sits around doing nothing, but his blood is in what is called by the veterinarians a hypernitrogenous condition. Don't try, please, to pronounce this word or your tongue may get hung on a center as engineers find their engines get sometimes. But simply reason that the blood is overcharged with food nutrients that nature can't get rid of. Now that is the exact condition the horse is in when hitched up to drive to town or do a day's work. He feels well and acts well, but start him off at a trot or even a brisk walk, and he will go but a short distance before he will stumble, or hang back, stop trotting, and appear tired, although perhaps he has not gone a half-mile. He soon begins to sweat, or not sweat in the proper sense of the term. It will be an exudation of water highly charged with ammonia coming out through the capillaries (pores) of the skin. Stop the horse and you will find him breathing very quickly, sometimes panting for breath. Put your hand on the muscles of his hips and you will find them hard and tense. Continue to make him move and you will soon find him scarcely able to pick his feet off the ground. Every step seems to pain him. Continue to make him move or hurry him at all and he will fall broadside, and generally speaking be unable to get to his feet again, and many times never be able to stand on his feet, frequently die from a heart clot, or a blood clot on the brain. Now these later conditions need not take place at all and the disease Azoturia need not be a serious matter at all, although through ignorance of its nature, and ignorance in caring for the animal when once attacked, it is killing thousands of horses yearly on the farms of the country. Far more horses die in the farmer's hands than in the city horse owner's hands yearly simply because the city man uses his horses daily rain or shine, the

farmer stops the use of his on rainy days. Now I have said it could be wholly and absolutely avoided. Pretty strong language, that, some folks will say. But I mean it, so I put it strong. Whenever the working horse is on full grain feed, when the idle day or days come cut that grain ration right in two in the middle, then there won't be any surplus or excess of food nutrients taken into the blood; also try to give him a little daily exercise. A daily run in the barnyard for an hour and this dread disease will not exist. But in some instances this may not be possible. The horse owner does not know in the morning whether he will work his horse that day or not. Especially is this true of the physician's horse or the livery in town. It is a hard drive for a day or several days, then there comes a day or several days when there is no driving The same happens on the farm, and thus it is the horse is fully fed, and when the time comes to use him he is put in harness and started, and then the trouble. Now it can be to an extent averted if he is started off slowly, and the circulation of the blood is increased slowly by the exercise. This is good policy in every case when starting on a drive. A rapid gait on a full stomach kills many a horse. But it is not our purpose to write on specific management of the horse, but general management. Just as soon as the horse begins to manifest stumbling or stiffness in his gait, or breaks out in a sweat, **stop him. Don't drive him even a rod. Stop right where you are.** The exercise you are giving him or making him take is increasing the pulse beats of the heart, and this half-coagulated or thick blood can't pass freely through the small blood-vessels of the muscular system. Hence it is that the horse's limbs stiffen and become cramped, and he stumbles. Now what makes him sweat? Nothing, only it is an effort on nature's part to relieve the cramp by throwing off what she can through the pores of the skin. **Now Hark! Stop and Listen** to what I am going to say to you. No man of medicine ever yet cured any disease only as he studied nature's laws and learned to aid nature in doing her work. Now if by exercise we are making the cramping of the muscles, our common sense should dictate us to stop the exercise, and not do as hundreds do, get frightened and try to hurry the horse to some near-by barn or get him home. If we do the chances are the cramping will increase and extend to the great spinal nerve, and then he loses all control of his limbs, and down he goes in the road with a probable spinal congestion (spinal meningitis) brought on by our lack of sense. Thus always have sense enough to say whoa no matter where you are, and thus put a stop to the cramping cause.

Now nature is trying to relieve by perspiration. Put on the blanket and help the horse perspire, and in nineteen out of every

twenty cases it will not be over ten or twenty minutes before the sufferer will be breathing naturally, when he can be walked slowly to some near-by barn. When the barn is reached get some hot water and some thick fabric (an old piece of carpet is ideal), it needs to be fully a yard long and just as wide, if a yard and a half long all the better. Wring this out of the water just as hot as can be safely handled, and get it on his back just as hot as it can be laid on without scalding. Then put one or more dry blankets over it. This will keep it warm and steaming for an hour, when it should be wrung out of the hot water, and nineteen out of twenty horses if thus treated will be easier and breathing quite naturally inside of an hour and will manifest a desire to eat something. Now right here is the most critical part of the disease. As the horse is acted upon by the hot application to his back and hips, there will soon be a micturition, and the first passage of urine from the kidneys will be fairly black in color, with a strong ammoniacal odor. Then if the owner is a man with but little will of his own, and less knowledge of disease, he will get frightened right away. Then in most sections of the rural districts there are found men all-wise (in their own estimation), especially so when there is a sick horse or cow in the neighborhood, and they are always on hand to give advice and recommend any and all kinds of herb teas, some poisonous and others harmless; or some fellow's doctor once gave him some sweet spirits of niter, and he knows that the horse will die with inflammation of the kidneys if something is not done right away, and at last about four out of five horse owners will yield to such advice unless a veterinarian is there with courage enough to stand up and fight. That black water is proof enough to convince the average horse owner that the kidneys must be in an awful condition and thus it is that many a horse when well on the road to recovery is drugged to death by the whims of fools and the weak kneed owner.

Not one time in ten is any medicine needed to stimulate action of the kidneys. High-colored urine is not by any means an indication of diseased kidneys in this disease. The kidneys' office work is to carry off poisons in the system, and the food nutrients have now become ammoniacal poisons circulating in the blood, and the kidneys are removing them as fast as they can by means of the steaming and sweating the horse is undergoing from the hot application along his spine. An ounce dose of aloes to stimulate the liver and bowels is all that most cases need, and only in case there is no passage of urine from the bladder at all, in from one to two hours after the horse is taken sick, should the sweet spirits of niter be given, when two ounces in a pint of warm water will usually be all that is needed. Perhaps once in twenty or more cases it is necessary to use a catheter, when of course the

veterinarian should be sent for to use it. It is always best to send for a veterinarian when a good one is within reach. But my strife in writing this is to instruct the horse owner, so that the horse can be on the road to recovery before the veterinarian can be summoned. The period mentioned is again a critical one by reason of so many horse owners believing that as long as a horse is hungry for something to eat, and will eat, he is doing well. I have had a lot of fighting in my practice to keep the owner, and sometimes his wife, daughters and sons, from feeding a horse to death when he began to get better from azoturia. They one and all seem bent on feeding the horse some dainty. Now have sense, don't feed him anything for the next 24 hours, but give all the water he desires to drink. This of itself will aid wonderfully in helping to rid the system of the agents which brought on the disease. Keep up the hot water on the back for a full twelve hours, when it can be discontinued. A horse thus treated will be ready for moderate work again in three days, usually in about twenty-four hours he can be led about for an hour or two for exercise, or if from home when taken removed to his home at a walking gait. Now I have thus far given a prevention and a treatment when the disease first appears and that is just as far as it is wisdom for the general horse owner to go in the treatment of this disease. Whenever the horse has been driven until it falls it is one of the most serious ailments the veterinarian has to contend with, and not less than three cases will die where one will make a good recovery, as spinal disease is frequently brought on, with a paralysis from which it takes months to recover.

INFLUENZA OR DISTEMPERS

can well be spoken of under this chapter, inasmuch as the well-fed animal and the properly-exercised animal, yet not overworked, has little to fear by reason of any distempers that rage as an epidemic among any of our domestic animals. The well-fed, properly-nourished animal has a much greater germ-resisting power than the one that is poorly fed and kept under conditions that are not sanitary. The fatalities, also the sequels, are not nearly as great when colts or horses, also cattle, are in prime condition, and are exposed and contract some distemper as is the case when the low vitality is attacked by the same disease. By sequels I mean diseases like roaring in the horse, that may follow a case of common horse distemper, strangles, laryngitis or epizootic. Even a common cold from exposure to a chilling blast is not nearly as likely to result in pneumonia when the animal is in perfect health from good feeding and sensible care.

Now I have touched a subject on which there is a great variance of opinion. I refer to sensible care of farm stock. I might

devote many pages of this little work to this subject, but think it best only to throw out a few hints in relation to it. A horse barn or a cow barn can be so constructed as to keep the air in it at all times at about the same temperature, and the foul gases can be taken out by a system of ventilation. Yet more animals in it suffer and die than the animals kept in a neighbor's barn whose ventilation is doors and windows. The parlor barn frequently has parlor furnishings, and it is so nicely arranged that it becomes wholly unnecessary for the animals to go outside at all, while the animals of the neighbor of necessity are turned out for a time daily. My practice has called me to the barns of the rich, the barns of the poor, and the barns of the middle class, and my experience has been, in periods of epidemics, that the middle class, where the animals are well fed and turned out to get their drink from a trough, even in cold weather, are less likely to contract distempers, and have lighter attacks, than the animals kept under the so-called more sanitary conditions. It is the pampered child that catches diphtheria and dies, when the child that is reared to roughing it a little escapes. And so it is with the colts and calves. It is never good policy when distempers are prevailing to leave horses or cows out in a rainstorm, or to keep them out of doors on chilly nights, especially when the ground is wet for them to lie on. But it is equally as bad to keep animals closely confined in a stable ever so well supplied with pure air. As a rule the human race is too much afraid of taking exercise in the open air. Especially is this true when a disease of an epidemic character is raging in the house or in the barn. The tendency is too great to shut down closely all avenues for fresh air to get to the patient. We therefore desire to call attention to the fact that pure air is more essential than much drugging, when an epidemic disease is in the horse barn or the cow stable. Those who have studied the actions and symptoms of horses when suffering from distempers or lung disease know that when given a close box stall horses will always be found with the head toward the door or window when given a chance. The very nature of the disease calls for pure, fresh air, and instinctively they strive to get it. Keep the body comfortably clothed and in all cases where the lungs are involved bandage the limbs in woolen bandages from knees down to the feet. As to diet, give them whatever their appetite seems to crave, only don't overfeed. We will now briefly speak of some of the more common distempers, beginning with what the farmers call the

OLD-FASHIONED HORSE DISTEMPER.

The veterinarian calls it strangles, as there is always a soreness of the throat which prevents the horse from swallowing water

easily without strangling, while he may be unable to eat hay and perhaps whole grain. Meals he will rarely try to eat, as they require an increase of saliva from the mouth, and wheat bran mashes, which are so popular with many veterinarians, I have never been able to get a horse suffering with strangles to eat. Theoretically the wheat bran would be all right, but practically it does not work as desired. I said the sufferer had difficulty in swallowing water. I might have said that it is nearly or quite impossible for a horse to drink from a brook or from a low trough. But if water is placed in a pail, and held up so the sufferer does not need to put his nose below the lower part of his shoulder blades, he will manage to drink considerable water, and thus refresh himself. The water should be fresh and sweet and offered him from a pail every one or two hours. In some cases of this form of distemper there will be a swelling of the glands of the throat and a suppuration will follow, in which case when the swollen glands beneath the jaws begin to cast off the hair, and the skin looks a little watery, it is good policy to lance the tumefied gland and let the pus out. Then with a syringe wash out the cavity with a one per cent solution of carbolic acid. Whenever the glands are greatly swollen and slow in coming to a suppurative stage it is good policy to use linseed meal poultices on the glands to hasten suppuration, otherwise no poulticing is called for. Perhaps nine out of ten horse owners will consider this disease the worst whenever there is a large degree of swelling and much discharge of pus after the glands begin to suppurate. But such is not the case. The most dangerous cases are those where there is no glandular swelling and no suppuration. The pus forms in the membranes of the throat, is swallowed, and frequently results in septicaemic poisoning of the blood, which manifests itself in dropsical swelling of the limbs, or perhaps running sores on various parts of the body, or as is sometimes the case, an internal gland suppurates and death ensues after the owner thinks the horse fully recovered. To relieve throat soreness I have found nothing better than a mixture of equal parts of powdered sanguinaria (blood root) and powdered chlorate of potash. Mix a teaspoonful of this and a tablespoonful of simple syrup, and with a wooden paddle smear on the tongue every two hours, and to guard against the septic poison of the blood from the swallowed pus as often as twice per day make a paste of hyposulphite of soda and simple syrup and smear on the tongue, using an even tablespoonful of the soda. This will neutralize the poison of the pus or render it harmless in most cases. Hence, I advise the use of the soda in every case of distemper, be it ever so light. Avoid working the horse when suffering with distemper, even in a mild form, as the respiratory organs are all of them more or less affected,

and a little overdoing is very apt to terminate in congestion of the bronchial tubes or lungs. Also when the animal is put to work after having recovered from the disease be careful and do not leave him tied in a draft or facing a strong wind. A little overwork or fast driving kills many a horse when he is well over the distemper. The twin sister to strangles is the disease known as

LARYNGITIS.

This can well be called a severe cold causing a sore throat. The same may be true of the disease known as pharyngitis. Both can be treated as one, on the same general principle. Steaming the head with the steam from pine or hemlock boughs is an old and very good agent to use in connection with chlorate of potash and blood root, already advised. A mixture of spirits of ammonia one ounce, oil of turpentine one ounce, and olive oil six ounces rubbed over the head of the glottis (throat), and along the windpipe, makes a good counter-irritant. Use morning and night, until the skin becomes a little tender, then stop its use, and in most cases recovery will follow under good sensible care alone. When there is a harsh, rasping cough, it may be well to give the following cough syrup, which should really be in every horse stable to use in case of colds. It is made by simmering together over a slow fire two ounces of oil of tar, two ounces of Canada balsam, one ounce tincture of capsicum, three ounces extract of belladonna, three ounces syrup of squills, one pound granulated sugar, one-half pint water. Constantly stir until all ingredients are well melted together. Give of this one tablespoonful on the tongue or make into soft balls with meal. About ten years ago a peculiar disease of a zymotic nature (atmospheric) struck this country, and in certain sections has become serious. I refer to the catarrhal disease called

PINKEYE.

Horsemen doubtless gave it this name by reason of the membranes of the eyeball becoming of a bright red or pink color. It has now become under certain conditions very serious among horses, cattle and sheep. It has its origin in a special micro-organism or microbe which floats in the air. The disease is ushered in by a high temperature with a severe chill in some cases. It is not a disease that can be arrested by any known treatment. It is advisable always to cease work with the animal, place it in a half-darkened stable, yet free of all foul gases and well supplied with pure air. The eyes bathe frequently with a lotion made by dissolving a half-ounce each of borax and acetate of lead, and one ounce of common salt, in a pint of clean rain water. As a rule neglected cases leave the eyes weak, and when horses are

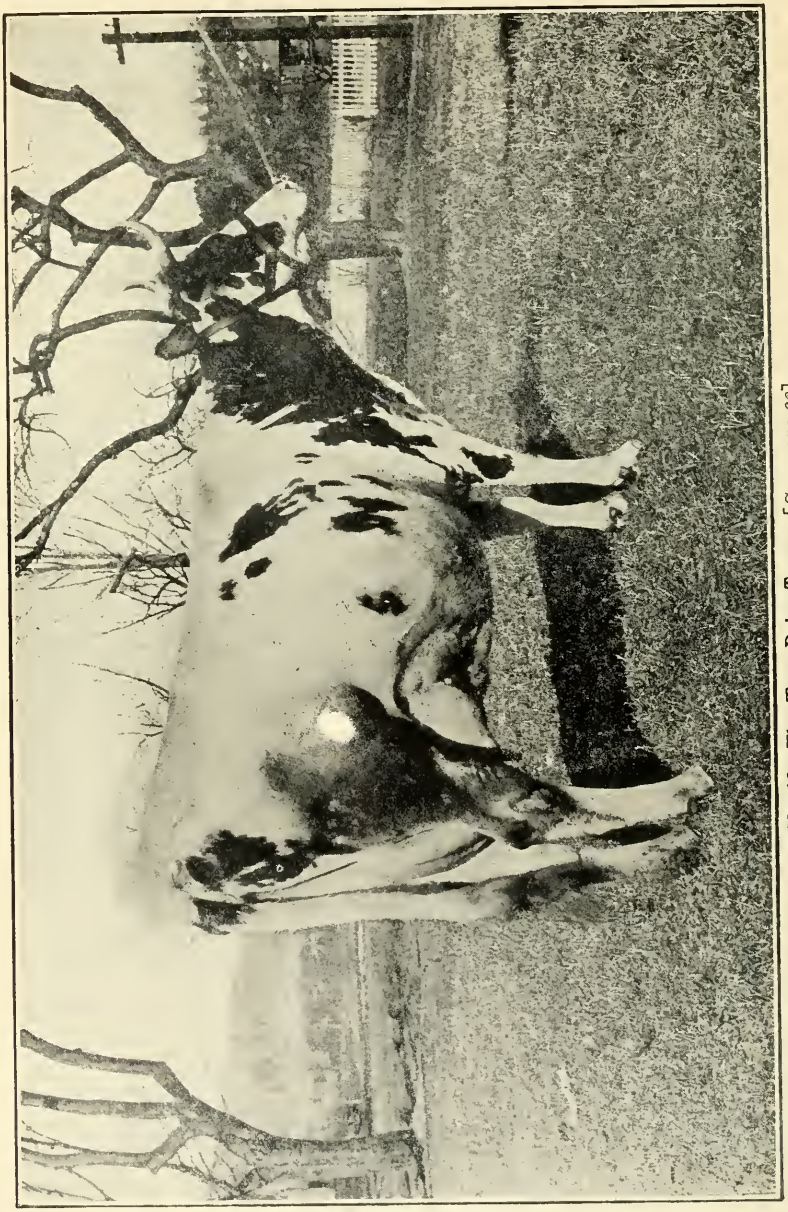
so left they should have their eyes protected by a piece of thin blue or brown veiling put over the forehead or the eye weakness may develop into blindness later on. Always give the suffering animal plenty of laxative food like wheat bran mashes, and leaves of the burdock or fresh green grass to cool the system. The more serious forms of epidemic diseases are diphtheria and la grippe, but these of necessity come under the head of diseases where all medical treatment should be under direct supervision of a qualified veterinarian. Another disease that comes under the head of being largely produced by improper feeding, and bad management when horses are suffering from the before-mentioned influenzas, is

PULMONARY OR ASTHMATICAL HEAVES.

While it is true that horses are bred with a physical conformation which renders them susceptible to this class of heaves (bellows heaves horsemen and farmers call it), we will speak briefly of it. Heaves is incurable. It is largely produced by the habit farmers have of feeding on hay or straw during the winter months and not enough of the grains containing more nutrition. Thus constantly is the stomach distended with bulky food, until the nervous structure of the respiratory organs becomes deranged. Horses suffering with heaves can be helped by feeding cut hay, dampened with lime water, and the grain ground into meal and mixed with the cut hay, never feeding more than a half-bushel measure full at one feed, and not less than three pounds of it being ground grain. If hard worked feed from four to six pounds of the ground grain to a thousand pounds weight of horse at each feed.

CATARRHAL HEAVES.

This class of heaves is usually a sequel to some one of the forms of distemper. While there is no cure for it, careful feeding on nutritious food, and from time to time syringing out the head through the nasal chambers with a solution made by mixing a teaspoonful of creolin in a pint of water, will help it. A better remedy is dissolving a tablet of Chinosol in a quart of water and using. When the disease is more of a bronchial nature than catarrhal the cough syrup advised for laryngitis will afford relief.



No. 12—The True Dairy Type.—[*See page 62*]

CHAPTER II.

WOUNDS AND ACCIDENTS.

These can be spoken of only in a general way, as the extent and location of a wound must of necessity govern the treatment to a degree. When a vein or an artery has been severed and the hemorrhage is great, the animal will bleed to death before the veterinarian can be had, hence it becomes highly necessary for the farmer to have on hand some powerful styptic and also be able to take up a small artery if necessary. Four or more ounces of the tincture of the muriate of iron should be in every farmer's household to use in the stoppage of hemorrhage due to severed veins. Saturate cotton with this and crowd into the wound if a punctured one or bind on if a surface wound. This will effectually stop the hemorrhage of all veins except the larger ones, and will also stop hemorrhage from the smaller arteries. A flat piece of iron dipped in boiling water and applied to small arteries will stop the hemorrhage. It is preferable to the heated iron, as that will only sear over and the flow may break out afresh. In case the artery below the knees or hock is severed, in most cases the leg can be corded above the wound by tying a piece of soft rope around the limb above the wound and then with a stick twisting the rope so tightly as to stop the flow of blood. In case the hemorrhage comes from a vein tie the cord below the wound, then apply the saturated cotton mentioned, and bind on tightly, and in most cases after keeping the limb corded for about an hour the hemorrhage will be brought under control. In all such cases after the hemorrhage has been stopped leave the wound without further dressing for a full twenty-four hour day. Then carefully soak loose the cotton from the wound, and carefully cleanse the wound with a carbolic solution made by mixing a teaspoonful of liquid pure carbolic acid in a half-pint of water, then saturate cotton with the following: Pure carbolic acid one ounce, glycerine four ounces, olive oil six ounces. This is one of the best healing dressings known to veterinary science. Punctured wounds need cleansing by the use of a syringe so as to reach the bottom of the puncture and destroy any possible germs that may have been carried into the wound, which is all important.

LACERATED WOUNDS OR ABRASED WOUNDS.

When there are no vessels severed of course the wounds require no such treatment at the start as do the punctured wounds.

In all such cases make the wound clean with the carbolic solution advised previously, and if there are threads of tissue or fragments of muscle, with clean knife or shears clip them off. This will insure a better and quicker healing. I am speaking now of wounds in the muscular tissue and not kicks on the joints of the limbs, or open joints or bruises made by dull calks in case of a kick by another horse. But lacerated or torn wounds in the flesh, or where the part has had the skin torn off, after they have once been cleaned by the carbolic solution and the shredded fragments removed the object should be to heal them without any pus formation if possible, and what is known by medical men as the first intention. If we can aid nature to do this we have accomplished the very best purpose. Now please remember that no agent known heals any wound, nature does this. All we do is to put the wound in shape so that nature can heal it, and then keep the germs that the air is full of from infecting the wound. While the veterinarian may have his own special germicide and antiseptics, which he may prize more than others, I never have found any superior to a mixture of bichloride of mercury one ounce mixed in finely powdered resin four ounces. This mixture is a poison and needs to be properly labeled as such, and kept where children or animals cannot reach it. Apply by dusting on the wounds, and unless there are watery or pus secretions do not wash off at all. It will form a scab over the wound. Keep flies away and give nature every chance to heal the wound.

THE PICKING UP OF NAILS.

Of late years more than formerly animals, especially horses, are liable to step on nails carelessly left in pieces of board, or the horse may half pull a shoe, and the nails that held it in place be on, and a puncture made in the sole of the foot or frog. The owner thinks that when he has pulled the nail out all that is needed has been done. But alas, such is not true, whenever a nail has been driven through the sole or frog, or any other instrument sufficient to bring blood, when it is withdrawn there is great danger of serious trouble without a sufficient opening is made to allow a thorough disinfecting of the wound the nail or other body made in the foot. Sometimes the trouble arises from the carrying into the foot of the germ of tetanus (lockjaw) or the imprisoned blood may create pus which has to work its way out somewhere, or a case of blood poison or canker of the foot follows, and death results in thousands of cases that need not have occurred had the owner had knowledge enough to realize these simple facts, and had removed the nail or other instrument, then with the blade of his pocket knife cut out a hole in the bottom of the foot large

enough so that the end of the little finger could have been inserted. This will let out the blood, and allow any possible germs to be destroyed. While there are many germicides which can be used, none is superior to carbolic acid, used at a strength of one part acid to five parts water. Pour a little of this in the wound, then saturate cotton with it and crowd into the wound, in twenty-four hours remove, and pour a little more in the wound, when in most cases a pledget of cotton saturated with pine tar crowded into the wound will stay there, and in a few days there will be a filling in of the horn. Some use the spirits of turpentine instead of the acid. But the turpentine in the form that most farmers have it is not of sufficient potency to destroy the germ of tetanus. Many are reluctant to cut a hole in the foot. A very needless fear, as a little cotton or oakum saturated with tar will keep all dirt out, and the animal can be put right to work.

SHOULDER BRUISES AND CYSTIC TUMORS.

If every horse owner had a suitable collar for his horse, and understood the anatomy of the shoulder sufficiently to understand where the pressure should and should not be placed, then fitted his collar so it really would fit, there would be no such thing known as hard, callous swellings or soft puffy swellings seen on shoulders. But these things will continue just as long as horse owners continue to use the old English collar and hames. Thousands of farmers in civilized countries will stick to this style of collar with the same tenacity that a Hindoo will stick to the custom of his fathers and use a crooked stick to till the soil propelled by a water buffalo with a stick tied across his forehead. So it is that modern styles in collars, like the Humane and Twentieth Century collars, will have a hard time bringing about a change, and I see plainly that veterinarians will have plenty of business for many years to come in treating these swellings. Of late years sweat pads of various materials have been put in use to overcome the evil the ill-fitting collar is producing. To an extent they do some good, and in other ways they are a damage. A hole can be cut out of the pad and take pressure off the gall or hard swelling, and then relief is afforded, and some agent in the form of gall cures is used to heal up the sores. I will give three remedies: One is verdigris ointment, which any druggist can procure. Another is made by mixing dry white lead in raw linseed oil until it becomes a thick white paint, and the third is a dusting powder made by mixing an ounce each of oxide of zinc, finely powdered alum and borax and four ounces of finely powdered starch. Dust on the raw sore from an old pepper box. If a large puffy swelling comes on the shoulder, and fills with bloody water (simply a large blood blister formed

between two layers of muscles of the shoulder caused by the collar not fitting), there is only one way to treat it and that is to lance it deep enough to let the bloody water out before it dries down into an organized body (callus). When the lancing is done in the beginning, it needs no further treatment more than to syringe out daily with a one per cent solution of carbolic acid. In case several days have elapsed before the swelling is lanced, it becomes what is called encysted, which is the beginning of a callus. Then it should be injected with the tincture of iodine daily for a few days, until pus is being secreted liberally. Then change to the one per cent carbolic solution until healed. Should any proud flesh form in the wound made with the knife in lancing dip a camel's-hair brush or feather in butter of antimony and daily wet it with it until reduced.

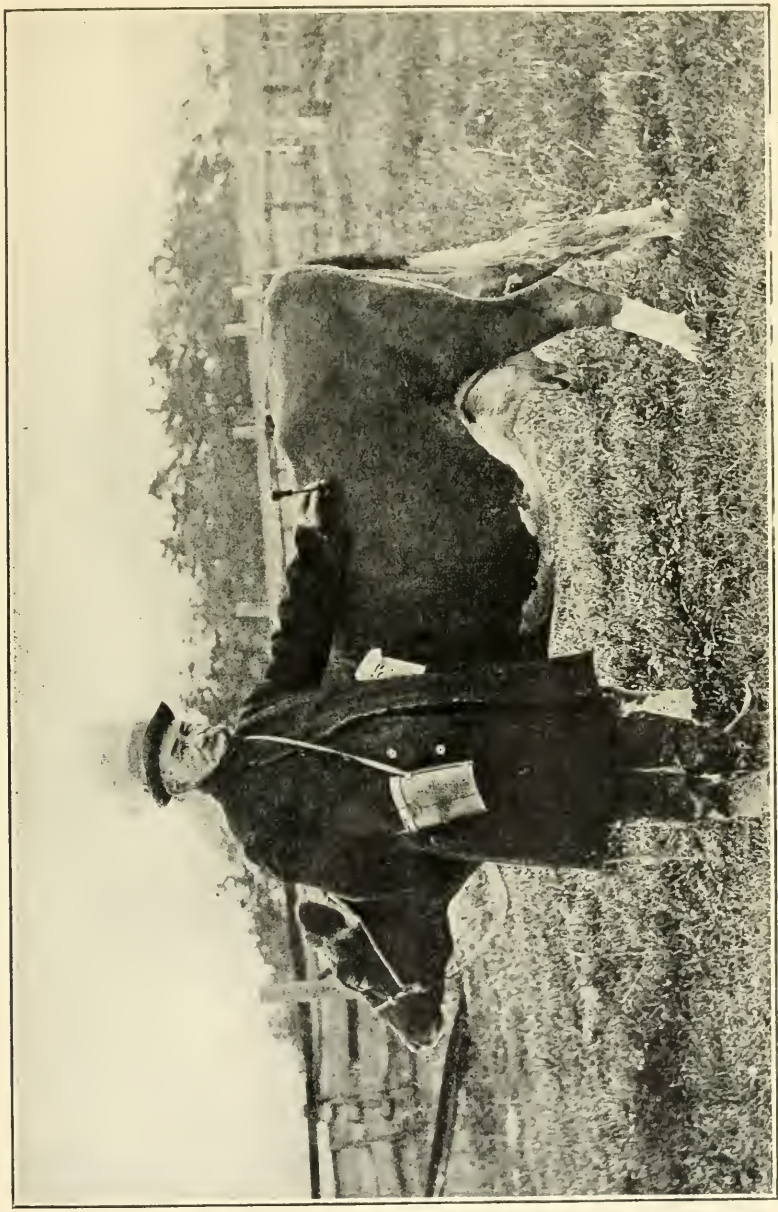
BRUISES.

All poll evils and fistulas of the withers are no more nor less than the result of a severe bruise to the extent of injury of the tissue covering the occiput bones of the head in one case, or the spines running upward from the spinal column to form the so-called withers in the other. Now the farmer can do only a few things with these. The first is use either cold or hot water to reduce any inflammation as the result of a recent bruise. I don't care where it is located, whether on the muscular part of the body or on a joint, perhaps inflicted by a kick from another horse, use water. It is far superior to any liniment that can be made as a reducer or preventive of suppurative inflammation, which should be the first thing sought. An ounce of sal ammoniac and the same of common salt, added to each quart used, when cold water is used will make the water still colder. This line of treatment we especially advise in case of a bruise on a joint, and where possible wring cloths out of this salt and ammonia water and wrap the joint with them, changing about every hour. In case of bruise of the withers it is rarely known when it does occur, as the horse may roll on a stone in the pasture, or jam his withers against the side of the stall, or put his head under a bar or a gate. The same may occur in bruising the top of the head, so that generally speaking no one knows when it occurs, and the first noticeable feature will be a swelling. In all such cases use for a day or two the medicated water. Then apply a blister, none better than the biniodide of mercury ointment. This repeat in about ten days, in case the swelling does not take on the appearance of breaking out. In that case a competent veterinarian must be employed. There is no other way, as a deep lancing of the tumor is needed before a cure can be made.

OPEN JOINTS.

These can only be treated successfully by the skilled veterinarian. All the horse owner should do is to keep the animal absolutely quiet in a stall (not in a pasture field) and never as some do, thinking to save expense, lead or drive the horse to the veterinarian, and thus ruin all chance of saving the animal. Right here I will bring the horse part of this little book to a close by saying: In all serious cases always bring the veterinarian to see the patient, especially so in cases of influenzas, lung and bowel troubles and injuries to a joint. Many a time have I had horses and cattle brought to see me and the journey killed them, when if the owner had left them in the barn and come for me the animal would have been well on the road to recovery by the time I got there. While it may be true that moderate walking exercise will, in some cases, be beneficial such exercise as most horse owners give the sufferer kills more than the disease does.

No. 5—The place to tap a cow to relieve Bloat. **Dr. Smead puts the point of his fore-finger on the exact spot.**—[*See pages 43-44*]



No. 6—Dr. Smead shows the correct angle for trocar or knife in tapping cow for Bloat.—[*See page 43*]

CHAPTER III.

CATTLE DISEASES.

While cattle are practically immune from many of the diseases that afflict horses, the diseases of cattle are none the less important, inasmuch as milk from the cow is so extensively used as food for the human family, and the carcass forms a large per cent of the meat that is consumed. Unless the cow is in good bodily health she is wholly incapable of furnishing milk of a wholesome character for human food, or even for the rearing of her own offspring (in case her disease is of the mammary glands). Right here again I desire to say, the feeding of milk-producing cows is in a sense of more vital importance to the human race than the feeding of horses, sheep or swine. The milk she produces is simply a product made into a liquid form of the food she eats, the air she breathes and the water she drinks. Give her a rotten food, germ-laden air to breathe and poor water to drink, and it becomes impossible for her to put into the milk pail a product of high quality. While the theory prevails among many scientific men that milk as it comes from the udder is not contaminated with germs that are in the udder, but with germs on the udder which fall in the pail during the act of milking, it is by no means a fact that germs of certain diseases do not actually abound in the milk before it leaves the milk cistern in the udder of the cow. While a class of food mouldy in its character can be fed to the cow, or beef animal also, and no evil results follow in the form of gastric or kidney disease as in the horse, it may in other ways prove to be a cause of fevers of an anaemic form, the cow becomes emaciated and may even die from nervous prostration or impoverished blood, due to micro-organisms taken into her system through the food she has been made to subsist upon or the water she has quenched her thirst with. A word to the wise is sufficient without further comment.

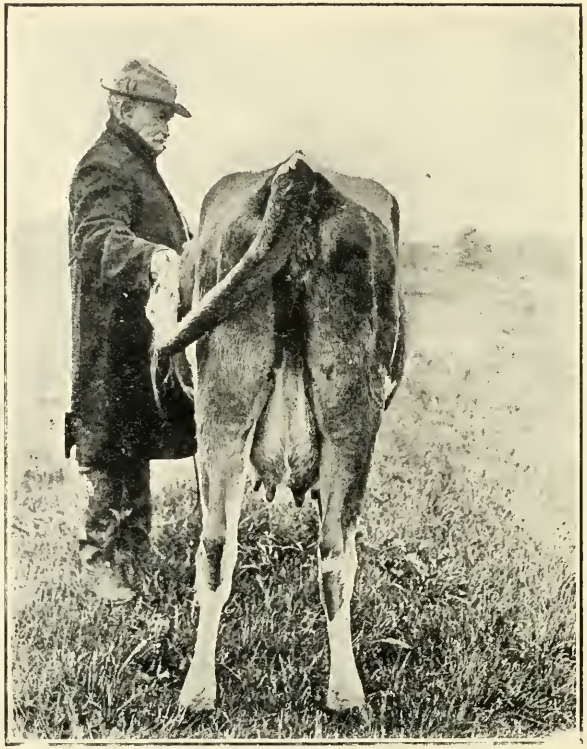
GARGET (MAMMITIS).

The disease Garget, as farmers name it, Mammitis as the veterinary profession knows it, is one of the most common cow ailments the farmer has to contend with. It may have causes without number. It really is only an inflamed condition of the whole or some part of the udder of the cow. When the cow is in full flow of milk her udder is the most sensitive part of her physical system.

Blood laden with food nutrients is determined to her udder, and her udder temperature is in some instances from one to two degrees higher than the temperature taken at the mouth. Now let a cow in full or even half normal flow of milk be allowed to remain out in a cold rain storm, whereby she contracts a cold and has a shivering fit, the chances are that she will either stop milk secretion almost entirely or her udder become highly inflamed and we have a case of general garget to contend with. Hence the great importance of keeping all cows in from such storms as a preventive; and whenever one suffers from taking a cold in any form doing something to break up this cold or shivering fit just as quickly as possible before the udder becomes inflamed is a necessity. As a home remedy a pint of good ginger tea and an all-wool square horse-blanket is good. And now I am going to speak of two very active remedies, both highly poisonous, yet perfectly safe when used as they should be. The one is the tincture of aconite, the other extract of veratrum. In buying either of these always have the druggist mark on the label the dose for a person, then make it ten times as much for a horse or a cow. The laws of all states compel the druggist to plainly mark it as poison. Give first above dose of aconite and half an hour later give a dose of the other, until all chill ceases, and the skin becomes moist under the blanket, and many a case of garget will be headed off.

LOCALIZED GARGET.

It sometimes happens that one or more quarters of the udder become hot and tense. This form of garget can be traced to one of the three general causes. (1) The cow may have a bad conformation of the udder, as photo No. 1 will show, or be too narrow across her hocks, as photo No. 14 shows, and if she is a large producer of milk her udder will be constantly banged by her hocks in walking, and if made to hurry they will sometimes inflict injury to such an extent as to inflame one or both hind quarters. Again cows with long udders, when they lie down on short platforms in the stable so that the udder hangs over the edge of the manure gutter, will bruise the udder. And again such udders will lie on the hock joint of the leg when lying down, and the leg above it will lie right on the udder and bruise it. Now right here I will say, get rid of all such udders by breeding them out of the herd. Use no bull whose dam and grandam had such a formed udder. The better the breeding of such a bull the more sure he is to get heifers with badly formed udders, gargety udders veterinarians call them. Photo No. 3 shows a well formed udder and properly formed hock for a dairy cow. As a remedy for this kind of garget, use local treatment, hot water applied with thorough rubbing un-



No. 13—Dr. Smead showing the correct form of thighs and hocks for a dairy cow.—[*See page 62*]

No. 14—Cow too narrow across hock joins, making her subject to injury of the udder.—[*See page 33*]

No. 3—Cow with well-formed udder and hocks and consequent freedom from udder troubles.

No. 8—Dr. Smead showing how to relieve a choked horse by a blow on a plank held across the buttocks of the animal.—[*See page 61*]

til quite dry. Then apply some of a mixture of lard and turpentine. This is a first-class home remedy, and use it twice or more daily, giving teaspoonful doses three times per day of the extract of pokeroot. Now we come to another form of garget, where there is no inflammation whatever. It is not really garget, but what can be more properly called a

GARGETY CONDITION.

The cow has in some way received a blow on some part of one quarter of her udder, and while there is no visible fever or hard lump to be felt a small abscess has formed, and from time to time the pus comes down into the milk cistern (cavity at the base of the teat), and during the act of milking these little chunks of pus come out with the milk and will be seen on the strainer. Now this is not Garget, but what is known as a gargety condition of the milk, due to the small abscess formed in the udder gland. Now please do not understand me as saying that all lumps in milk that may be seen on the strainer are pus cells. Lumps or chunks can get in the milk from a stoppage of the follicles (tubes) in the udder, and there will be seen when these follicles clear themselves small organized pieces of casein (cheesy deposit), but such milk, whether there be pus in it or even the cheesy deposit, is wholly unfit for human food, as in the act of straining all that is done is to take out the larger chunks of pus and casein. In most cases if each teat is milked separately it will be found that one quarter of the udder alone is responsible for this condition. When this is found, then the milk from the remaining quarters can be saved as human food. It has been a long-time practice among dairymen to give saltpeter in tablespoon doses, yet I have doubts as to whether any drug that may be given ever had much effect upon the abscess or injury in the udder gland. Quite recently the G. P. Pilling & Sons Co. of Philadelphia have invented a double syringe, whereby the milk cistern of a cow suffering with this condition can be cleaned and disinfected, and in many a case where the cow would lose one or more quarters of her udder if not daily syringed out with some harmless solution for a time it can be saved. We therefore advise every dairyman to get either this or some other garget syringe and use as may be needed. As a solution a heaping teaspoon of common baking soda dissolved in a pint of boiled water is a good one.

THE USE OF MILK TUBES.

Right at this time, I consider it fitting to speak of the use and misuse of the milk tube. When a farmer owns even a half dozen cows it rarely happens but that one or more of them will

in some way or manner get a teat injured, so that it becomes impossible to milk this teat by hand, and the tube has to be resorted to, sometimes with the result of spoiling the quarter with the tube by the time the wound is healed. Now this need not occur, and will not occur, with a proper tube, properly used.

THE PROPER TUBE.

Milk tubes are found on the dealer's counter in four sizes, namely: two inches, two and one-half inches, three inches, and four inches in length, and the size in diameter is always in proportion to the length. They are all of one price, and four men out of five will buy the biggest they can get for the money. Thus it is a tube four inches in length, and full one or two sizes larger than the milk channel in the teat, is bought to use on a cow with a teat not over three inches long. Thus again about four cow owners out of five think the farther up the teat they can push the tube the more milk they will get, so they push the oversize tube up the teat and wound it, then punch the end up into the udder gland and inflict a wound there also, and the next time they try to milk the cow they find the teat and udder hot and tense and no milk in it, simply spoiled by the tube that was as unsuited to use as a crowbar would be for a toothpick. There are very few cows in whose udder a three-inch tube will not reach the milk cistern and draw all the milk there is in it, and in most cases a two and one-half inch tube is long enough and large enough.

HANDLING THE TUBE.

The unseen things in this world are the dangerous ones, and no one can see a germ any more than he can see the force that drives the trolley car. The user of a milk-tube may carry on his hands germs enough to spoil all the cows' teats on the farm, yet not see one of them. Yet he wonders why, when he carefully ran the milk-tube up the teat of the cow, it inflamed the teat so much. A dead easy thing to understand when we learn about these things we can't see. The user wiped his hands off on the milk-tube, and then shoved the tube up the teat of the cow, and wiped the germs off on the lining membranes of the teat and in her udder. Now hot water is cheap, and if one will take hold of the base of that milk tube and dip it in boiling water for an instant he will kill every germ on the tube. Wait a half minute and the tube will be cool enough so as to not scald the teat, then insert it up the teat, and draw the milk, after which rinse the tube in cool water, then hot water to get the milk off it, and a milk tube can be used in safety indefinitely and not inflict injury to the teat.

COW POX OR INFECTIOUS GARGET.

Most veterinarians class these two very distinct diseases together as one, but they are not so by any means. True cow pox is an eruptive fever, with pustules forming on the udder and teats, which will in about a week scab over and heal under the scab, and the cow will be well. But the disease which may look to be cow pox, and is not, doesn't get well. It forms a blister much like that of cow pox, then scabs over as the blister breaks, and then instead of getting well forms a phagedenic (spreading) ulcer and gets worse all the time. Again this latter disease does not always locate itself on the teat, or udder, but is more liable to infect the teat at the tip end of the milk channel, that point being moist. There a tiny blister forms, and does its spreading right up the milk channel, and goes into the udder and ruins the quarter if not immediately headed off in its work. The first noticeable symptom is when the milker sits down to milk the cow will cringe or kick when the milk is first started. The next time she will do more cringing, and soon the teat will be found hot and it is hard to squeeze the milk through it, coming in a much smaller stream than usual. When it gets to that stage there is little hope of saving that quarter of the udder. But it can be easily headed off in the beginning by the proper use of the following: Carbolized olive oil, made by melting one ounce of crystal carbolic acid and mixing when melted with ten ounces of pure olive oil. Use this on the end of the teat, or on all blisters or sores on the teat at each milking. Then to prevent the germ from working up the milk channel, with a small glass syringe inject a teaspoonful up the teat and milk it out again. This will so grease the milk channel as to prevent the working up of the germ. It is always worth the trial, even after the teat becomes hot and the milk hard to draw.

HOW THE INFECTIVE GERM IS CARRIED.

The milker conveys the disease from cow to cow through the hand. He milks an ailing cow, then milks a well one, and carries the germ right to her teats. Again no one knows just where the germ starts, but there are good reasons for believing on the floor of the stable when cows are kept on it. Therefore always scrub the floors with boiling water, then sprinkle air-slaked lime on them, to destroy possible germs of the disease.

BLOODY MILK.

This may be the result sometimes of tuberculous disease of the udder. Therefore always ascertain the quarter it comes from, and examine closely for any hardened lumps in it, and if found have the cow tested with tuberculin. If no such condition exists

consider it due to injury of the udder from thumping it with her hocks in fighting flies, etc. Spray the cow with a good fly killer and give her teaspoonful doses of powdered sulphate of iron, mixed with common salt, twice daily, mixed in a feed of meal or bran, until the blood ceases. With heavy milking cows practice milking them three times a day.

LUMPY JAW (ACTINOMYCOSIS).

This disease is becoming more and more common. It is due to a specific fungus found on various plants or pasture grasses. Its name is "Ray Fungus," and under the microscope it looks like a cluster of Indian war clubs. It sometimes locates in the glands of the throat and internal glands, but generally either in the glands of the throat or the tongue, and through any sores about the teeth it works down to their extremities and infects the inner part of the bone. Through much experimenting carried on by the Bureau of Animal Husbandry at Washington, D. C., it was found that when iodide of potassium was given in from one to two drachm doses twice daily for two weeks, then once per day for about two weeks longer, ninety per cent of cases where the glands were the seat of the fungi would cease to go on with the enlargement, and the disease stop from doing serious damage until such time as the animal could be made fat for beef. And in cases where the bone was involved fully sixty per cent of cases could be headed off. The surgeon may save advanced cases by an operation, but the farmer would better give the potassium iodide, and use a blister on the enlargement as soon as it is noticed, which repeat every two weeks for a few times. No better blister is found than this: Compound one of the ointment of iodine crystal, powdered cantharides and the biniodide of mercury. Prepare it by mixing a drachm each of crystal iodine, biniodide of mercury and powdered cantharides, in three ounces of lard.

CHOKING OF CATTLE.

Cattle frequently get choked on various things, and the farmer should know how to relieve them, as in many cases death will take place before the veterinarian can get to see the sufferer. When the choking is by reason of some spherical body, like an apple or a potato, it is no serious thing to relieve the animal; with some body like the section of a cabbage stump it is far more serious. Yet when the farmer possesses a fair amount of sense and judgment, and does not get excited and lose his head, few animals need die from choke. There are two forms of choke. The most common is the high choke, in which the substance the animal tried to swallow is lodged at any point of the gullet between the mouth and

No. 7—Dr. Smead shows how to drench a horse easily.—[*See page 61*]

No. 4.—Method of putting the rubber hose down the cow's throat to relieve choke or bloat.

where it enters the body. The so-called low choke is the one where the body is lodged beyond the visible part of the gullet. There are three very inexpensive instruments or rather home-made devices which in a case of emergency will answer every purpose, and every farmer needs them. First is a piece of inch rubber hose, costing about sixty-five cents. It needs to be full six and a half feet long (See photo No. 4), as it is about six feet from the mouth to the entrance of gullet into the first stomach of the grown cow or ox. Yet many think when they have pushed an obstruction down the gullet out of sight it is far enough, when in fact it is only about half way to the stomach or rumen (paunch farmers call it), which lies back of the center of the body of the animal. Now before going farther I desire to call attention to one fact, and that is no rigid body like a whip-stock, rake-handle or other similar device, can ever be passed from the mouth to the rumen of a cow, calf or ox. The gullet takes a turn upward soon as it reaches the thoracic cavity (lung cavity), and soon after the whip-stock or other rigid device enters this cavity it can follow the gullet no farther, and if it is pushed will go right through the gullet and kill the animal. Yet scores of ignorant editors of the agricultural press are giving space to just such nonsense that ignorant writers desire to put in the paper. All devices must of necessity be flexible, and while it is not supposable that farmers would own the expensive instrument known as a probang, they can own a piece of rubber hose one inch in diameter, which is second only to the probang for utility in various ways, which will be spoken of later on. First it is hollow, and liquids can be poured or syringed into the end of it that sticks out of the mouth. After the hose has been shoved down the gullet this is a very great advantage, as when it has been shoved down to the obstruction some raw linseed oil or melted lard can be poured into the protruding end of the rubber hose and by gravitation will run down to whatever obstructs the passage, when the obstruction being greased with oil or lard will be, by gentle pushing of the hose, passed into the rumen, and the job will be over before the veterinarian can be phoned and get on the ground in case he lives three miles away. The next instrument is a bull snap costing twenty-five cents, to place in the nose to better hold the animal when inserting the rubber hose. And the last is an oblong ring, made of half-inch round iron, large enough to put the hand and arm through. An old neck-yoke ring of large size, flattened down a little, can be used in an emergency case. But it is better to have the blacksmith make one about ten inches long, so as to be held easily in the mouth by an assistant when the

operator is at work with this in the mouth. The farmer can safely pass his hand down the throat of cow, ox or horse, and where the obstruction is in the throat pull it out with his hand. In case of an ordinary sized cow the arm of a man will be long enough to go down the gullet a few inches. Now hark ye all: **Never try to push an obstacle down into the rumen that can be felt from the outside.** Never, as some have done, have an assistant hold the fence maul on one side while the operator hits the other side with a mallet, to mash the obstacle. A blow that would mash a potato or a hard apple, say nothing about turnips or cabbage stumps, would mash the gullet of the animal, and seriously injure it if not cause its death. Yet this foolish, yea torturous, treatment has found its way into print in numerous agricultural journals. Now what is the sensible, rational way? Pour a little oil or melted lard down the gullet. The oil of course cannot go any farther than the obstruction, but it will grease the obstruction, whatever it may be, and enable one to manipulate the obstruction from the outside and bring it up into the mouth, where it can be reached easily by the hand, and brought out. In case of the low choke of course recourse must be had to pushing it down after greasing, always with the piece of rubber hose mentioned, which being hollow and cup-shaped to an extent, will not slip by the obstruction.

BLOATING OF CATTLE.

Bloating of cattle is very common on farms of the country, and every cattle owner should know how to relieve it. No animal should ever die with clover bloat when the farmer is at home, or even his wife or boy ten years old. Of course all farmers should avoid turning cattle on fresh wet clover or alfalfa when they are hungry. In case the one in charge was on the watch for bloat and took notice of the bloat commencing, the putting of a smooth, round stick about three inches in diameter in the cow's mouth, and tying it with a cord put over the head so as to hold it in place and keep the mouth open, and the animal striving to get it out, will so work the muscles of deglutition as to keep the gas coming out of the rumen before it accumulates to the extent of closing the valves at the lower end of the gullet. But this having been neglected in nine cases out of ten the piece of rubber hose mentioned can be run down the gullet to the rumen and let the gas out in short order. But the time may be when the bloated animal is in a field a mile or more from the house, and would die before one could get to the house and get the hose. What shall be done?

TAPPING.

Every farmer or farm boy should be taught how to properly tap a bloated cow or ox. It really is one of the simplest operations known to veterinary science. There is one point, and one point only, where an incision can safely be made by a novice into the rumen and let the gas out, and that point is on the left side of the animal, as one stands behind it facing toward it. In a full grown animal it is one hand's breadth from the back bone, and half way between the hip and the last rib. Note the place where my hand lies in the picture. Photo No. 5. The proper instrument is a trocar, costing seventy-five cents. It is no better than a large sized pocket knife, only as the trocar has a tube (canula) which can be left in the wound until the gas has all escaped, while if the knife alone is used, one will need to turn the blade crosswise of the cut made with it, and hold it in place until the gas has escaped. Now inexperienced men fail to relieve by tapping the animal when they have only a knife, by reason of three methods of using it. The first is: They use too small a blade or too short a blade, or perhaps do not insert it full length. In an ordinary cow or ox it is full three inches or more through the skin and abdominal walls into the rumen (paunch), so one need never be afraid of inserting the knife too far. The trocars are made six inches in length, with a canula (tube) five and one-half inches in length, while the farmer's pocket knife blade is rarely over three inches in length, and will barely reach the paunch when plunged into the animal full length. Other failures occur from not inserting the trocar or knife at the proper angle. Some will hold the trocar or knife nearly horizontal, others will hold it nearly perpendicular. The right angle to insert the knife or trocar is at an angle that would, if long enough, come out at the forward teat of a cow. Note photo No. 6. The gas will be reached every time when the trocar or knife is plunged deep enough, but it may be as said, the trocar may be at the house a mile away when the farmer finds the animal nearly dead from bloat, then of course the pocket knife must be used, and if any farmer is not onto his job well enough to own a pocket knife, he had better throw up his job and go to work in some man's sand-bank.

BLOATING CALVES AND SHEEP.

The same general principles should be used in the treatment of them as in older cattle, always in tapping when needed. Do it on the left side and never on the right side no matter which side of the animal may be distended the most. There is only one

point in all ruminating animals where the rumen (paunch) is attached to the abdominal walls and that is the one marked in the picture No. 5.

TAPPING THE HORSE.

Tapping the bloated horse is the business of the veterinarian alone, and should never be attempted by the unskilled man.

CHAPTER IV.

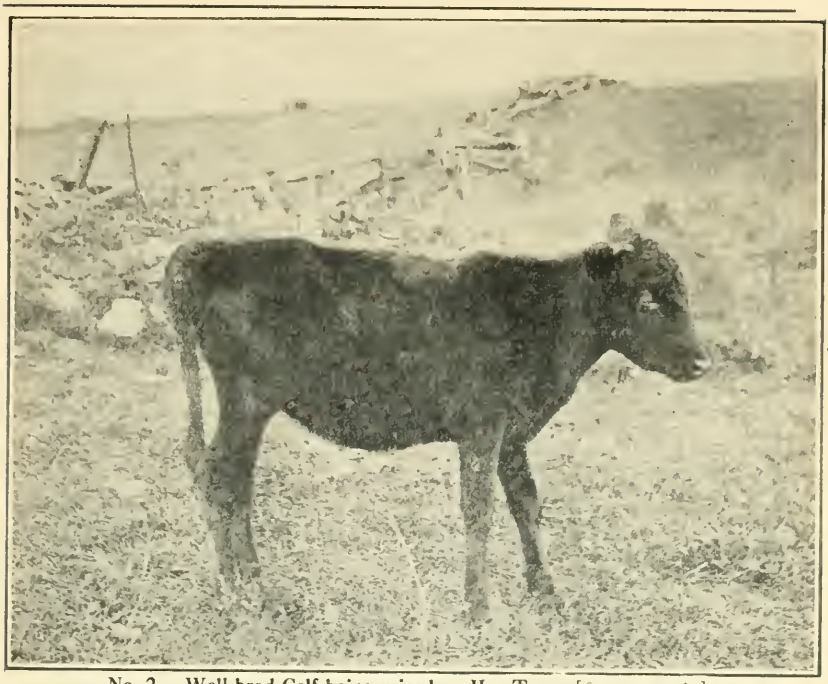
BOVINE ABORTION AND STERILITY.

For fully a century have veterinarians been laboring to discover the cause and a remedy for cows failing to conceive, and to learn why many of them drop the foetus prematurely, and yet the trouble has been steadily on the increase. Now this is casting no slur on what investigators have done. They have learned much, but there is much yet to learn. Some have worked on the theory that some specific germ is causing the farmer the trouble he is having with his cows. Others are working on antitoxins and serums to inject into the system of the cow to render her immune from the effects of the germ. Honorable veterinarians have thought they had found specifics that would enable the farmer to stop the trouble in his herd, and a lot of empirics have set their wits to work and got up nostrums by the score and sold them to the gullible. Now with the exception of the last named I feel like giving due credit to all that has been done. It all tends toward the solution of the problem, even though it has not solved it. I have no specific to offer the reader. On the other hand I have to tell him I don't think any will ever be found, yet I hope I may be wrong in this conclusion. While specific germs may and do cause some of the trouble, it is not the maximum but the minimum cause the writer has had to contend with. The cow herself must be studied, and means used to manage her by which we can prevent sterility and abortion. In brief we must take her as she presents herself to us at the present time; and take her into consideration as a physical being, and a very abnormal production of man, subject to certain conditions even as the human female, especially shock from fright, sense of sight and smell.

We must realize that our modern cow has been so bred as to produce milk, not only in sufficient quantity for a calf four months in the year but she must produce enough to well rear two calves for four months, then keep it up for four months longer, and then produce enough to feed one calf for a period of two months, or be condemned as an unprofitable dairy cow. Now all this ability has been bred and fed into the cow by the skill of man, but in the accomplishment of it we have dwarfed and rendered less vitally strong the organs of reproduction, which are in correlation with the mammary glands. The cow that will produce milk only in a limited quantity for five or six months of the year

under good care and feeding never aborts except as the result of severe injury. Her general vitality is good, her mammary glands small, and her reproductive functions strong. She gets in calf readily and carries it full time. She can witness extraordinary sights, and inhale offensive odors, and it will have no effect upon her sympathetic nervous organization, as she is of a low nervous organization just as the peasant woman who can produce a strong healthy babe every sixteen months, needs no mid-wife and is ready to perform her usual labor in a week's time, while the more refined races of the earth, with a higher nervous organization, need to be on constant guard or an abortion will be the result instead of the much desired living healthy child. Now this is plain talk, my readers. It is the refined, improved cows and heifers in our dairies that give us trouble in getting in calf and then in keeping it up yearly until they have passed the age of usefulness. It is this condition that confronts us more than it is a micro-organism. The organisms (germs) that cause sterility and abortion I consider as the least to fear. We have learned that carbolic acid given internally for a prolonged period will destroy the germs of abortion that exist in the blood or uterus, while dilute sprays of it on the vulva and vaginal injection will destroy the organisms. But drugs will not cure inherent predisposition. A nervous child must be carefully cared for to prevent convulsions, and this unbalanced cow of a high milk producing function must be fed and cared for on the line of a realization, that she, like the nervous child, must be fed to make her strong in her weak parts. It may be considered in a sense an inherent weakness, brought about by breeding. When we have a cow capable of producing ten thousand pounds of milk annually we should realize that all such animals, or the heifers from such animals, have a corresponding weakness of their reproductive organs. Heifers fail to desire to breed, and when they do breed they fail to conceive.

This brings us to another contributive cause, namely, the rearing of the calf. This in far too many instances is done on the extreme plan. The little young thing is either fed beyond reason to make a show animal of it, kept closely confined in a pen or stable, given all the new milk it will take, and grain or meal as soon as it will partake of it, with the result that it becomes loaded with kidney fat to the extent of encasing the reproductive organs in fat, so that conception is impossible, or if a male it is impotent. We see more of this among the beef breeds than among the dairy breeds. On the mass of dairy farms, however, it is the reverse. The price milk commands in market induces the owner to strive to rear the heifer calves on just as little milk as possible and supplement with hay teas, calf meals and



No. 2 —Well-bred Calf being raised on Hay Tea.—[*See page 48*]

No. 15—A cow that is never sick, never has Garget, will raise a calf every year and run her owner in debt $25.00 a year for feed.—[*See page 63*]

various condiments that are on the market. Many of these are good, and I don't condemn them when the calf has arrived at an age to live largely on solid foods. But when the calf-raiser starts in to raise a calf at a week or even three weeks of age on this class of supplemental food he starts a calf on life's journey with a low vitality, an impaired digestion (like the calf shown in photo No. 2), sometimes with the result, in case it is born with an inherent weakness of the uterine organs, that we have a heifer that is either sterile or aborts on slight provocation. Or in case she drops a living calf at two or two and a half years of age and largely sends the nutrients of the food she eats into the milk pail, she fails to conceive or aborts if she does. I might take up time and space in further discussion on this line of thought, but a hint to the wise is sufficient. A strong animal at maturity must be started right in infancy or it disappoints the owner when it grows up into cowhood. This thought can well be put in print and nailed up in many a farmer's cow stable. Exercise and growing, digestible food in plenty the first year of a heifer's life would make it a yearly breeder of calves instead of a yearly aborter.

Another thought on this line I will present: By far too many farmers think that when their cows or heifers are once safely in calf they can be turned in a back woods pasture to fight flies and subsist on any kind of herbage they can find, in most instances with a scanty supply of grass. When winter time comes the wheat straw stack and a nubbin of corn will be sufficient. But it is not. There is growth to be made in this heifer, and a life in her uterus to support and develop and give birth to, and you need not be surprised if she aborts at about the sixth, seventh or eighth month in pregnancy from sheer weakness of the vital functions to grow the mother and develop the offspring.

SYMPATHETIC ABORTIONS.

In a preceding paragraph I spoke of a sympathetic nervous organization. This needs explanation; no one, however, can fully explain it. A person is run over by the cars and his limbs mangled and is brought into the presence of perhaps twenty fellow beings. Some will faint at the sight, others will have a sickness at the stomach and vomit up the contents of it, all will be shocked, and perhaps not five out of the twenty could pick up the bleeding person and care for him. Sickening odors have the same effect on some persons. Thus it is that a pregnant woman of a high nervous organization can never aid safely a member of her own sex at time of child birth without danger of bringing about a premature birth in her own case. This, in a homely way of expressing it, is what the effects are on the nerves of sympathy. Now we must come to a higher knowledge of the cow than many of us have,

when we assume to treat her so as to avoid abortions in the herd. We must come to understand that even the brute is endowed with a sympathetic nervous system, with some of the senses, especially smell, much more acute than the human. So that when we send dogs after or otherwise frighten the pregnant cow we may by reason of that fright cause her to abort. Then we must realize that when an abortion occurs from any cause in the herd other cows may from the effects of the sight and odor be so acted upon as to produce an abortion in them. Thus we must immediately remove the aborting cow from the herd and keep her away until no segments of the placenta are being passed from her. In high-grade herds if the aborting cows are allowed to remain with the herd a veritable epidemic through sympathy may prevail in the herd and yet no germ be present. The foetus must be removed out of sight and smell of the herd, and not as some do throw it out on the manure heap. In all cases use antiseptics and germicides. Carbolic acid in one per cent solution is the most commonly used as vaginal injections once a day. Creolin is also good, but of late the German germicide, sold under the trade name of "Chinosol," I prefer to either, the carbolic acid or creolin being perhaps preferable to use as an outside wash, on account of the odor counteracting the odors of the cow when the placenta or fluids are being passed.

FOODS AS A CAUSE OF ABORTION.

In these days of milk craze, when both the scientist and the farmer are striving to get the most milk out of the cow possible, concentrated foods rich in protein, which can be purchased the most cheaply, are being fed to excess on some dairy farms. Even scientists sometimes look only at the large per cent of protein the food contains, and overlook digestibility and palatability, and to induce the animal to eat it advise that cheap molasses be fed with it as a seasoning. Stock food proprietors frequently season up by-products rich in protein so as to make them highly palatable, and for a time they may cause a larger milk flow. Yet all the time these foods may contain active medicinal agents which injure digestion or agents which directly affect the uterine organs, and when a cow has a predisposition to abort produce an abortion. Cottonseed meal contains in a limited degree some of the active emenagogue effects of the root of the plant (meaning the power to produce uterine excitement and contraction). Thus it is that the farmer needs to know of what the rich concentrated protein feeds he buys are composed, and to always feed cottonseed meal and the combinations containing it sparingly to his large milk-producing cows. It is these precautions that must be considered as well as the looking for germs when we combat abortion in the herd. And without this done by the farmer himself

there is little hope of the scientist or veterinarian ever doing very much toward helping him out of his trouble. The first thing every farmer should come to understand is to distinguish the difference between the germ form of abortion and an abortion that may be from accident or from sympathy.

HOW TO DISTINGUISH BETWEEN THE ABORTIONS.

Whenever a cow aborts from the action of specific germs that attack the placental membranes the foetus will usually be found covered with a yellowish slime when it is first dropped and the placenta will be found more or less covered with tne same and the cotyledons (buttons the farmer calls them) will be found in a partly putrid condition. Again the placenta will usually be passed in from two hours to two days, and if one will part the lips of the vulva he will usually find small red pimples or small ulcers on the walls of the vagina. In all such cases lose no time in taking the cow and fetus from the sight and possible smell of the herd, and flush out her uterus with a solution of carbolic acid or creolin, making it of a strength of a tablespoonful of either to three pints of warm soft water. Or better still if it can be gotten use a tablet of Chinosol dissolved in a quart of water. Continue to use daily until all segments of the placenta and slimy fluids have ceased to be seen passing from her. Then don't breed her again inside of two months. As a rule cows thus treated will get in calf again as readily as if they had not aborted.

Whenever a cow aborts from accident or uterine weakness the slimy appearance of the foetus will as a rule not be present and the placental membranes will remain attached to the walls of the uterus. In all such cases remove the cow from the herd just the same as if the case were of germ abortion and treat her just the same as if she had given birth to a fully developed calf and the placenta had been retained, which we speak of next, and such treated cows will be as likely to again breed as if they had not aborted. But such cows may need more special care in feeding to keep them vitally strong during pregnancy or from weakness of the uterine organs they may again drop the calf prematurely.

GIVING GERMICIDES INTERNALLY IN CASES OF SUSPECTED GERM ABORTIONS.

It is as yet an undecided question as to whether the germs which produce the germ form of abortion abound in the blood or inhabit the uterus alone, but it matters not as far as the farmer is concerned where the germs abound so that he can eradicate them from his herd. Thus it is that all suspected cases of germ abortion should be treated internally with some agent which can be given with safety. Without going into details I will say

that carbolic acid given internally in from twenty to forty-drop doses for alternate months during pregnancy has proved very efficient. It can be safely given in case it is properly given, and the proper way to give it is to put the dose of acid in a half-pint of water and use the water to dampen a mess of wheat bran or meal. Give once per day for a month after the cow has dropped her calf, then skip a month and give again after she is safely in calf and continue through her period of pregnancy and she will be often cleaned of possible germs and be a safe breeder afterward.

TREATING THE BULL.

In all cases where it is thought that the bull has served an infected cow thoroughly wash his sheath with the solution named or better still use the Chinosol, which all druggists should keep. The bull may be the means of spreading the germs through the herd if not treated, and it is such a simple thing to render him perfectly safe that no farmer should neglect to treat him in every case there is reason to suspect infection.

RETENTION OF THE PLACENTA.

It sometimes happens that nature's laws have in some un known way been interfered with, and the placental membrane (afterbirth) still retains its adhesion to the walls of the uterus. Various medical agents have been advised by the older authorities to bring on uterine contractions and thus effect the expulsion of the placenta, but in candor I don't believe that any of them has any effect whatever in loosening the attachments. In a case where the placenta was already detached and was retained simply by lack of uterine contractions sufficient to expel it the remedy may have been of use, and then I think a pint of ginger tea or a half-pint of spirits of wine, reduced one-half with boiling water, would accomplish just as much as stronger remedies like ergot. It is therefore well to give the ginger tea, or the spirits, and repeat it in about six hours, when in case there is no delivery of the placenta it can be considered as a case of retention from the natural adhesions not yet being detached. The former custom was to employ the veterinarian or cow quack to take them away, but no man did ever yet entirely remove them, as some of the attachments could not be removed, and of necessity had to remain to putrefy or rot away. Sometimes the neck of the uterus closed and locked these segments (fragments of the placenta) in the body of the uterus, when the only way nature had of getting rid of them was by absorption of the purulent pus into the blood. Thus many a case of septic fever (blood poison) was produced, rendering the milk flow for not less than six months wholly unfit for human food with the chances of the cow never conceiving again.

But the modern, safe and better way is not to endeavor to remove the placenta at all. This method the author of this little book claims to be the first to advise. With the discovery of germicides and antiseptics a new field was opened up, and now we can safely allow the placenta in a cow to remain indefinitely, or until natural conditions take place, by simply once daily injecting, with a proper cattle syringe, some antiseptic solution which will prevent germ inoculation, and in from two to eight days, as a rule, the whole mass will be passed, and the cow left in as perfect physical condition as though the placenta had been passed soon after the birth of the calf. As an antiseptic solution use a one per cent solution of carbolic acid or creolin, made by mixing a dessertspoonful of either in a quart of warm soft water, using at as near blood temperature as possible, or a tablet of Chinosol dissolved in a quart of water. It has the advantage of creating no smarting sensation to the cow. Every farmer needs a horse and cattle syringe fully as much as he needs a hoe and a shovel.

CATTLE AND HORSES OVER-EATING OF GRAIN OR MEAL.

On the best managed farm a cow or a horse will sometimes get loose and get into the corn crib, oat-bin or a bin of meal, and help itself to several times as much as can be digested. The danger to be apprehended depends largely upon the kind of meal or grain the animal eats. In case it is oats a cow may eat her fill and it is rare that injury follows. In case it is corn in the ear it is rare that the cow or horse is made sick if properly treated, which will be spoken of later on. But in case it is wheat or rye there may be acute indigestion followed with a stiffness, which is called grain founder, which may remain permanently, and so it is with the meals. Ground oats may give the horse the colic, but rarely produces impaction by drying up the secretions of the stomach and digestive tract. But corn meal, being so concentrated and devoid of fiber, is quite sure to become packed in the second, third or fourth stomach of the cow and in the stomach or intestines of the horse unless proper means are promptly used to prevent this condition. A very common opinion exists among farmers that no water should be allowed either horse or cow that has engorged itself with grain or meal of any kind. This belief doubtless has its origin based on the fact that one engorgement always calls for another, and when an animal has engorged itself with twice or thrice the grain or meal that it can digest its depraved appetite produces a depraved thirst, and if allowed to go to the creek or trough and help itself to all the water its thirst calls for it will add another engorgement of water to the engorgement of grain or meal. Then there are two engorgements to contend with, and the animal generally dies. Thus it is the farmer

jumps to the conclusion that all water must be withheld, which is nearly as fatal to the animal as if it were allowed to go to the creek or trough and fill up on water. Now we stated in the beginning of the article that the danger lay in the baking of the meal, by reason of there not being fluids enough to moisten it, saying nothing about there being enough digestive fluids to digest the surplus mass of grain or meal. Common sense is or should be the basis of all action. If there is grain or meal in the stomach that can't be digested, and is liable to soon absorb all the gastric fluids, common sense would say give fluids enough to keep this surplus meal from absorbing all the fluids and becoming baked in the stomach or intestine. Give water enough to make the meal into a thin slop, so that it can pass through all the stomachs and go out its way through the intestinal canal. Water given judiciously will accomplish more in doing this than all the drugs in a drug house.

WATER USED JUDICIOUSLY.

That means furnishing it to the animal in small quantities, at intervals of about every fifteen minutes. Two quarts at a time every fifteen minutes, until the thirst is quenched, is worth more than pounds of cathartics. It is simply the mechanical action on the meal, making it into a slop, so that it will go on its way through the intestinal canal and not bake. In the water each time place a teaspoonful each of ginger and common baking soda, to warm up the stomach and prevent fermentation. Animals thus treated will be enabled to get rid of enormous quantities of grain and meal and do no practical harm to them other than spoil their appetite and stop the milk flow, if a cow, for a few days.

TREATING THE ANIMAL AFTER BAKING HAS SET IN.

But it sometimes happens that the animal gets loose when no one sees it, and it may be hours before we know of it, and when the animal is found it is in pain. Baking of the meal has already commenced. Then what is to be done? A more serious condition now exists. We must stop the baking, or paralysis of the muscles of the digestive tract will soon take place. The thirst will be present, only more severe than if water had been given at the start. But give the water and the ginger and soda, with the same judgment and discretion, and in connection with it give about every hour a pint of pure raw linseed oil, and that is also given more for its mechanical effect than for its medicinal effect. It will by its mechanical effect soften baked meal and at the same time hasten its passage through the intestinal canal, and save many a case before the veterinarian can get on the ground.

CHAPTER V.

STIFF LAMBS.

It sometimes happens that when farmers are taking what may well be called ideal care of their ewes that are dropping their lambs in the early spring months some of their best lambs are found down and unable to rise on their feet, or if they are helped up will seem weak in their legs and perhaps walk but a few steps and drop down again. At first the lamb seems to suffer no pain and will be greedy to nurse the mother. Later on if nothing is done to relieve it a quick breathing is noticed and a total inability to stand, no desire to nurse the mother, and death soon follows. After giving the subject some years of study I can come to no other conclusion than it is wholly due to practically the same causes which produce the disease known and heretofore spoken of as azoturia in the horse, only the effect of the surplus food of the lamb may be different. My study of the disease has convinced me that it can be considered as wholly a surplus food disease, as we always find the lambs that are afflicted to be the single lambs of the flock and those whose mothers carry a full udder of milk and some to spare. Again it is always at a time when the little fellow is beginning to eat grain with the mother and also at the period when the ewe's milk undergoes a rapid change, for be it known that a ewe's milk changes in its fat content sometimes from as high as an 8 to 12 per cent butter fat content to about a 4 per cent content between the first week and the fourth or fifth week, while the other solids in the milk remain about the same. We find this condition: the lamb is taking more food nutrients into its system than it can grow fast enough to make use of and its blood becomes in a condition quite similar to that spoken of in the horse with azoturia. The lamb may be seen running and skipping and in an hour is paralyzed. Never have I known of twin lambs being affected nor the lamb that had scant milk supply. Thus it is we say that the disease is caused by too much food and a violent change of the mother's milk which renders it somewhat constipating. So we can reason that a surplus amount of unappropriated food nutrients together with constipation is the primary cause. Avoid the trouble by placing the large-milking ewes and their lambs by themselves and feed less milk producing food to them. Manage to have some succulent food for the flock at hand just before lambing time and feed it until the flock goes to pasture.

HOW SHALL AN AILING LAMB BE TREATED?

If discovered soon after being taken or beginning to walk stiff give it a tablespoonful of castor oil and a teaspoonful of sweet spirits of niter. This is to quickly move the bowels and kidneys. Then put the lamb to soak in a tub of water as hot as the hand can be held in for a full half-hour, immersing the whole body except the head and holding it in the water, meantime adding hot water so as to keep it hot. When taken out of the water rub it as dry as possible and wrap it in a woolen blanket and many a case will be quickly on the road to recovery. Of course a lazy man is never expected to do this and will not consider it worth while.

AZOTURIA IN PIGS.

Pigs are also prone to the same disease, especially when kept closely confined and fed all the nitrogenous food they will eat, for be it known that a pig will eat as a rule twice as much food any time as it can grow fast enough to make use of, and that is the only reason I know why they call him a hog when he grows up. Azoturia in the pig assumes a somewhat different form from that of other animals, seeming to take on more of a rheumatic form followed by a paralysis of the hind limbs due to the spinal cord becoming involved. The same general treatment as for the lamb can be used in the young pig. The older one give the physic and follow with stimulating embrocations to the back and loins, a strong decoction of Cayenne pepper is good. Also follow the physic with from ten to forty-grain doses of salol three times per day in some cooked oat meal. A mixture of spirits of ammonia one part, olive or linseed oil four parts rubbed along the spine is a good embrocation. But as a hog is a hog any way you can fix him and hard to doctor it is just as well to make him into pork as to spend time in doctoring him.

CHAPTER VI.

SPRING MANAGEMENT OF THE BREEDING FLOCK.

About March 1st every year trouble begins on many a flock owner's farm. His ewes have apparently wintered fairly well, and their condition, as far as flesh is concerned, is by no means bad, but about two, three or four weeks before the expected birth of the lamb a ewe is noticed to be standing with the head pressed against the side of the barn or feed rack. Sometimes she will be stupid, and if she attempts to move fast she will fall, and seems very weak. Sometimes she is unable to see clearly, and appears to be dizzy. This condition slowly grows worse, and in from one day to a week she is dead. The older works on sheep husbandry and farmers in general called it "grub in the head." This conclusion was arrived at by means of more or less of the larvae (grub) of the gadfly being found in the nasal chamber when a post-mortem was held. For several centuries this was a common belief. Yet like many another belief it was found sadly in error when more study was given to sheep and their necessities learned.

In a brief way I will say: My personal investigations have always found the cause to be constipation. The flock has been wintered wholly on dry food, sometimes lacking in variety. The sheep by nature is a constipated animal and it is an animal, barring the goat, whose appetite craves, and physical needs require, a greater variety of food than any other of our domestic animals. A succulent food of some kind is well-nigh a necessity in wintering a breeding flock of ewes in order to avoid the conditions named. and several others mentioned later on. In England there is not a day in the year that the breeding flock does not eat a succulent food of some kind, and the English shepherds never are troubled with loss from this source. This country is now well supplied with English breeds of sheep, but in most cases the English methods of feeding and care did not come over with the importation of the sheep. Thus it is that we find the English or mutton breeds suffering more from this cause than our American breeds of sheep.

Now I have said that constipation caused the death of the sheep. But few realize what the results of constipation may be in a pregnant animal, especially the sheep. A dozen or more diseases may be the outcome of simply feeding a pregnant ewe four months on dry hay, fodder and grain. Some will say, "I keep

salt where the flock can help themselves to it all the time." This is good as far as it goes. But no sheep can eat salt enough to take the place of succulent food. In England roots, cabbage or kale are fed, but in this country corn silage can be made to fill the bill in place of the roots, although not the equal of the roots or cabbage. But one or the other must be furnished in order to avoid loss by death of many ewes just before giving birth to the lamb. Now I wish to be fully understood in what I am saying. I mentioned variety of food right in connection with a succulent food, and I spoke of corn silage taking the place of roots. Neither corn silage nor roots of any kind must be wholly depended on. They can be depended on to fill one place in the winter feeding of the breeding ewe, but by no means must they constitute the whole or sole food for the ewe. Many jump to the conclusion that by reason of a certain food being a good one for sheep it can be fed as the sole food in wintering the flock. Were the shepherd to strive even for a few days to feed the flock of pregnant ewes on corn silage or roots of any kind, he likely would set many of the flock to scouring, and some ewes would prematurely give birth to their lambs. As a part ration succulence is essential, but dry foods are just as much needed as are succulent foods, and one won't take the place of the other.

Another important consideration in the feeding of the flock to avoid disease later on is the feeding of the dry foods. When the owner has clover or mixed hay, straw of various kinds, corn fodder or bean fodder or any other roughage it is not good policy for him to start in the winter feeding his poor feed first, thinking to keep the clover or mixed hay until about lambing time. The ewe when she comes from the pasture needs just as good feeding to keep up her bodily health as at any time during the winter. It is all important to keep the ewe strong and vigorous every day and not allow her to lose in flesh or strength for a single day. The sheep is not an animal that can be starved the fore part of the winter and regain what was lost later in the winter or early spring. If she needs clover hay in March she needs it in December. All hay or no hay, all straw or no straw at all is the custom when the flock owner is compelled to feed cheap or unmarketable roughage to his breeding flock. Yet a large number of American flockmasters do this, then wonder when lambing time comes why the lambs are weak and there is nothing in the udder of the ewe to feed the lamb. The correct way and by far the most economical way is to feed the better food right along with the poorer food from the beginning of the winter, feeding the better food at night and in the morning feeding the straw and if corn stover or corn stalks are to be fed (and by the way when the

stalks are in good condition they are by no means a poor rough feed), throwing them out on the ground for the sheep to pick over at noon when it does not storm. All sheep need a little grain feed, I care not how fleshy they may be, and the best of all grain feeds for the breeding ewe is oats. Young ewes may need but little, but older ones need feed in plenty. In this country it is safe to say that where one sheep is fed oats to its injury not less than fifty are allowed to get in low vitality for need of oats. It matters not what time of the day the oats are fed, but the succulent feed like the roots or silage is best fed in the fore part of the day.

In some parts of the middle western and eastern states bluegrass abounds and when the snow does not cover the ground will supply two very essential things for the breeding ewe, namely, exercise and succulence. But right here is an illustration of the truthfulness of what has been said: The bluegrass is abundant, and is succulent, hence the flock owner depends upon it. He allows the sheep to run out on the frozen bluegrass and stuff themselves upon it, but they are never fed, they are simply filled, and only half fed. They are plump, yet actually being vitally reduced in strength and prematurely give birth to their lambs, or if they carry them full time drop weak lambs, which the ewes do not own, or have no milk for them, and many a ewe dies at time of parturition. She has simply managed to store up vitality enough to carry her through giving birth to her lamb, then runs down and dies. Too much succulence and not enough food. All could have been prevented had a daily feed of good hay been furnished, and a liberal feeding of grain all winter long. Right here again is where thousands of sheep owners in this country bring loss in their flocks. They save the grain feeding until after the lamb is born, and then think to feed the ewe up into giving a good flow of milk when the lamb is there to nurse it—a mistaken idea. A breeding ewe that does not have a good udder of milk when the lamb is born can never be fed up into giving a large flow afterward. The proper way is to feed the breeding ewe a milk-producing food before the lamb is born, in fact all winter long, only don't put her on as strong feeding as when she is nursing her lamb.

DISOWNING LAMBS.

Some flock owners are always having trouble by reason of their ewes not owning their lambs. I feel perfectly safe in saying that nine times out of ten when the ewe drops a single lamb and does not own it she has no milk in her udder to feed it. She may have twin lambs and fail to own one of them when she has a full udder of milk, but put it down as a rule that the disowning of lambs is by reason of no milk in the udder. And there is no milk there simply because the shepherd fed his flock no milk-producing

food previous to lambing. Prevent the trouble by proper feeding is the best of all ways. When ewes drop their lambs in the pasture after being turned out for a few weeks before lambing it never happens that a ewe in good physical health fails to own her lamb.

CARE AT LAMBING TIME.

Shepherds are not made, they are born. It is the man who has an inborn love for sheep who makes a good shepherd and no other can be made into a first-class shepherd. We all instinctively drift toward the things we love in this world and the good shepherd always drifts to the sheep barn when the ewes are lambing. He has prepared his sheep barn and so arranged it as to have some little pens about 4x6 feet in size, so that when he sees a ewe is about to drop her lamb he can put her into it by herself. Then in case she drops twin lambs she will not get strayed from either of them and as a rule will own them both. The good shepherd is always familiar with his flock and the flock is familiar with him. He can go among them night or day without scaring them. A man not constituted to do this or too lazy to get up in the middle of the night at lambing time and go to the barn and see how his flock is getting along is not fit to have charge of a flock of ewes. There are many good feeders of sheep who are mighty poor shepherds to care for a flock at lambing time. A little assistance a ewe may need in the delivering of her lamb, and a few drops of milk given soon after its birth will save many a lamb's life and put a five dollar bill in the pocket of the owner five months later on. A little intelligent assistance rendered at this critical time saves the life of a fine ewe. The man who stands around with his gloves on and lets a ewe strain her life away, when one leg happens to be back in the uterus, is no man to look after the flock at lambing time. He may have graduated at an agricultural college and have a degree, be able to preach the Gospel or practice law or teach, but he has no place in the sheep barn. It requires a man of more energy, more sense and judgment than he possesses to look properly after a flock of sheep. Or if he thinks his hands too delicate to take hold of a young lamb and rub it dry in case the ewe is quite exhausted, and assist it to nurse, he may be taught to play a fiddle or possibly a piano, but he is not fitted to grace a sheep barn when the ewes are lambing. He may be able to write a good article for the press, or talk well from the platform at a farmers' institute, but keep him at that kind of work and don't allow him to enter the sheep barn. In closing this chapter it is fitting that I say something regarding the doctoring of sheep.

PARASITES.

The chief enemy of the sheep in this country is internal parasites, by which I mean the stomach worm and the throat and lung worm. The first named can be kept from doing serious harm by the simple method of constantly keeping where the sheep can have access to it medicated salt. Salt has long been known to be one of the best worm destroyers and worm preventives. When the salt is medicated by mixing in four quarts of salt one pound of tobacco dust, one pound of powdered wormseed and one-half pound of exiccated sulphate of iron, well mixed and placed in a box where the flock can have access to it constantly summer and winter, there is little danger of worm infection. It may be cheaper, however, for the flock owner to buy the medicated salt sold under the trade name of Sal-Vet. This I know by a personal trial to be a good preventive of worms in sheep and the proprietors preparing it on a large scale can furnish it at a low price, considering its value. Worms are so prevalent in this country that no flock owner should run the risk of the flock becoming infected when it can be so easily prevented. As a direct worm destroyer the best known remedies are found in the gasoline treatment and the coal tar creosotes. The method of giving them has been so frequently given in the bulletins and agricultural press that it would seem out of place to give it here. Again this work is put forth more to instruct farmers how to prevent ailments than to cure ailments, which must always be of necessity the business of the veterinary profession. The throat and lung worm is incurable only as the veterinarian is called to administer tracheal injection of special drugs. The adding of a gill of oil of turpentine to every four quarts of the medicated salt is the best known preventive.

EXTERNAL PARASITES.

External parasites can be kept under subjection by dipping the sheep and lambs in almost any one of the creosote or tobacco preparations on the market. The day is past and gone when the farmer can prepare his own dip. The manufacturer can furnish him the needed preparation ready for use for less than half what he can buy the crude drugs for, and the pure drug laws of this country practically make every dip a good and safe remedy to use if used as directed.

STRETCHES IN SHEEP.

This is practically unknown when sheep are fed succulent food as heretofore spoken of. When a sheep does have an attack four ounces of Epsom salts and a spoonful of ginger dissolved in a pint of warm water and given as a drench will afford relief the quickest of any known remedy.

CHAPTER VII.

ODDS AND ENDS.

Many a farmer is ignorant of how to give a horse medicine in a liquid form or drench. Photograph No. 7 shows a very easy method. It is simply a two-tined fork, the tines of which are placed in the mouth so as to straddle the upper jaw as noted in the picture, when a man can easily raise the head of the horse, not extremely high, but just high enough so that the fluid will not run out of the mouth, when even a woman or a boy can stand on a box if a man is not at hand and easily pour the drench in the side of the mouth as you will note the farmer in the picture doing. Raise the head only just high enough so that the horse can drink it easily. When the head is raised too high it becomes impossible for the horse to swallow and strangling may take place.

GIVING CATTLE DRENCHES.

Some veterinarians have great trouble in giving cattle a drench, but such is not the case when it is properly done. As a rule when the animal is in the barn with the head in a stanchion all one needs to do is to grasp the nostril with the thumb and forefinger and the animal will stick its nose up, when the mouth of the drenching bottle can be inserted and the animal will usually drink it as readily as an old toper.

RELIEVING A HORSE CHOKED ON OATS.

It is no uncommon thing for horses to become choked on oats and sometimes it becomes a serious matter. The first thing always pour a little water down the throat, which generally relieves the same as it will a person who chokes on some dry food. In case it does not relieve have an assistant hold a piece of plank on the buttock of the horse as is represented in the picture, while you with a fence maul strike the plank a sharp blow as you see me about to do in photograph No. 8.

A TYPE OF ROAD HORSE THAT USUALLY GOES LAME AFTER A FEW HARD DRIVES.

Many a horse that has good blood in its veins and is considered a first-class road animal goes lame when put to hard driving on the road, or even moderate driving. Photograph No. 9 shows a horse of this class. Any woman can safely drive it, but

look carefully at the fore limbs. Note the spring in the knees and the short, upright pastern joint. The spring of a road horse should be in the pastern joint and not in the knees, or the horse machine will not be a "laster" to use a horseman's phrase.

THE TUBERCULOUS TYPE.

Photograph No. 10 shows a type of cow in which veterinarians who have studied types of cattle find the most tuberculosis prevailing. Note the lack of depth through the heart and the lack of chest. While she may be a fair dairy cow her lack of constitution makes her always subject to pulmonary disease.

THE STRONG CONSTITUTION TYPE.

Photograph No. 11 shows the type of cow of great constitution and a first-class dairy cow, a little deficient in her udder conformation, making her somewhat subject to garget, also parturient apoplexy. Note her large nostril, her large jaw, her prominent chest and great power of digestion. It is rare indeed that we find a cow of this conformation suffering from tuberculous disease. Right the opposite of the cow in Photograph No. 10.

A FIRST-CLASS DAIRY TYPE.

Photograph No. 12 shows a cow of well-nigh a perfect dairy type. Animals of this type are generally not afflicted with garget except as the result of a severe cold. The picture is one of a pure-bred Ayrshire. She is not presented to boom the breed, but to show what the type of a dairy cow that is somewhere near perfection must look like, and at the same time have no inherent tendency to disease of the mammary glands and lungs. Photograph No. 13 shows the rear view of a pure-bred Guernsey heifer 28 months old, in milk three months, with an average daily record of 36 pounds of milk testing 5.2 per cent of butter fat. The photograph shows the correct form of thighs and hocks so as to make proper room for an udder not liable to injury.

NO ROOM FOR UDDER.

Photograph No. 14 shows a fairly good dairy type of cow, but it will be noted that she is so narrow across the thighs and hocks as not to have space enough to well carry her udder and she is constantly producing stringy milk as a result of injuring her rear udder with her hock joints. All such types should be bred out to prevent veterinary bills and bad milk from time to time.

A TYPE OF COW THAT IS NEVER SICK AND NEVER PRODUCES ANY BAD MILK.

Photograph No. 15 shows the type of cow that I am sorry to say is found on many farms of the country. They are never sick and their owner never has to call the veterinarian. In fact the owners of such cattle are always boasting that they always doctor their own cows. In case one loses its cud he gives it a slice of salt pork and in case a wolf gets in one's tail he splits it and puts in some salt and pepper to kill the wolf or drive him out. Or if perchance one may have hollow horn in the spring contracted from having a hollow belly all winter, he bores the horn and pours turpentine in the ear to make her shake the horn pith back again. So you see that he has no use for the veterinary profession and will call them all a pack of fools, myself included, for writing this little book. He never milks his cows during the winter as the cow never has any milk in her udder to take out. She may produce three thousand pounds of milk per year that will test 3 per cent butter fat; while she always consumes none too good a class of food she always costs her owner from $15 to $25 more per year to keep her than she produces him in milk. Look her over and see how she compares with the cows of the preceding photographs.

[THE END.]

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